

SUPERFUND RECORDS CTR	_____
Site	<u>Wells G &amp; H</u>
Break:	<u>6.4</u>
Other:	_____

*Draft*  
**REMEDIAL DESIGN  
INVESTIGATION REPORT  
AND FINAL DESIGN**

Northeast Quadrant of  
the Wells G & H Site  
Woburn, Massachusetts



SDMS DocID 517517

Volume I - Appendices  
Remedial Design Investigation Report  
Appendix K

PREPARED FOR

UniFirst Corporation

and

W.R. Grace & Co. - Conn.

SUBMITTED TO

U.S. Environmental Protection Agency  
Region 1

October 22, 1991

Environmental Project Control, Inc.  
Two Grafton Common  
Post Office Box 536  
Grafton, Massachusetts 01519

**DATA VALIDATION REPORT**  
**FOR**  
**ENVIRONMENTAL PROJECT CONTROL, INC.**

**WELLS G&H PROJECT**  
**TREATMENT SYSTEM SAMPLING**  
**VOLATILES ANALYSES DATA**

**Samples Collected 4/11/91**

**Chemical Analyses Performed By**  
**PACE, Incorporated**

**August 20, 1991**

**By:**

**Trillium, Inc.**  
**7A Grace's Drive**  
**Coatesville, PA 19320**  
**(215) 383-7233**



## EXECUTIVE SUMMARY

Data quality for this sample delivery group was excellent. Positive acetone and methylene chloride results reported in Samples S1-1, S1-2, and the trip blank were qualified as less than the reported values. These samples were apparently shipped via overnight courier; however, this information is not provided on the chain of custody forms.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Five samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on April 11, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-1	2571	04/11/91
S1-2	2572	04/11/91
Trip Blank	2573	04/11/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples were analyzed within the appropriate holding times.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

Relative response factors for 2-butanone in all initial calibration and continuing calibration samples were calculated by the laboratory using the wrong internal standard. Response factors were corrected by the data validator for 2-butanone, and copies of the revised Forms VI and VII are attached to this report. Any response factor, %RSD, or % difference values given in this report for 2-butanone are corrected values.

### **A. Initial**

Initial calibration criteria were met on 4/5/91 with the exception of the % RSD for 2-butanone (actual 46.8; criteria 30) and vinyl acetate (actual 31.8; criteria 30). Data were not affected.

### **B. Continuing**

Continuing calibration criteria were met on 4/15/91 with the exception of the % difference for methylene chloride (actual 27.3; criteria 25), carbon disulfide (actual 25.2; criteria 25), 1,2-dichloroethenes (actual 28.0; criteria 25), 2-butanone (actual 43.7; criteria 25), 2-hexanone (actual 31.3; criteria 25), and total xylenes (actual 25.8; criteria 25). Data were not affected.

Continuing calibration criteria were met on 4/16/91 with the exception of the % difference for acetone (actual 27.1; criteria 25) and tetrachloroethene (actual 25.1; criteria 25). Data were not qualified for tetrachloroethene due to this very slight excursion from slight criteria because all other QC criteria for this sample delivery group were met.

## **XII. System Performance**

System performance was acceptable.

## **XIII. Overall Assessment of Data for a Case**

Data quality for this sample delivery group was excellent. Values reported for acetone and methylene chloride were qualified as less than the reported values due to laboratory contamination. The samples were apparently shipped to the laboratory via overnight courier; however, this information is not provided on the chain of custody forms.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

SA SAMPLE NO.

51-1

2571

00019

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2238

Level: (low/med) LOW

Date Received: 4/12/91

Moisture: not dec.100.

Date Analyzed: 4/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	4.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	5.	U
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U
10061-02-6-----	trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	13.	
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene(total)	5.	U

1E  
VOLA LE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

51-1

2571

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No. 00020

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2238

Level: (low/med) LOW

Date Received: 4/12/91

Moisture: not dec.100.

Date Analyzed: 4/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

SA SAMPLE NO.

51-2

2572

00026

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2239

Level: (low/med) LOW

Date Received: 4/12/91

Moisture: not dec.100.

Date Analyzed: 4/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	2.	BTU
67-64-1-----	Acetone	4.	BTU
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	5.	U
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U
10061-02-6-----	trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	17.	
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene (total)	5.	U



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TEMPORARILY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

31-2

2572

00027

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2239

Level: (low/med) LOW

Date Received: 4/12/91

Moisture: not dec.100.

Date Analyzed: 4/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

VA SAMPLE NO.

*Trip Blank*

2573

00034

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2243

Level: (low/med) LOW

Date Received: 4/12/91

Moisture: not dec.100.

Date Analyzed: 4/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	4.	BU
67-64-1-----	Acetone	7.	BU
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	5.	U
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U
10061-02-6-----	trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	5.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene(total)	5.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Trip Blank

2573

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00035

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2243

Level: (low/med) LOW

Date Received: 4/12/91

Moisture: not dec.100.

Date Analyzed: 4/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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6A  
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00042

Instrument ID: J J

Calibration Date(s): 4/ 5/91

4/ 5/91

Matrix: (soil/water) WATER Level: (low/med): LOW Column: (pack/cap) PACK

Min RRF for SPCC(#) = .300 (0.250 for Bromoform) Max %RSD for CCC(\*) = 30.0%

LAB FILE ID: RRF020= J2147 RRF050= J2143  
RRF100= J2146 RRF150= J2145 RRF200= J2144

COMPOUND	RRF020	RRF050	RRF100	RRF150	RRF200	RRF	% RSD
Chloromethane	.937	.944	1.082	1.042	1.092	1.019	7.3#
Bromomethane	1.142	1.176	1.280	1.173	1.152	1.185	4.6
Vinyl Chloride	* 1.072	1.125	1.364	1.214	.995	1.154	12.3*
Chloroethane	.676	.749	.833	.758	.763	.756	7.4
Ethylene Chloride	1.186	1.350	1.515	1.400	1.430	1.376	8.9
Acetone	.478	.390	.486	.474	.517	.469	10.1
Carbon Disulfide	3.018	3.985	4.313	3.850	4.010	3.835	12.7
1,1-Dichloroethene	* 1.028	1.290	1.419	1.194	1.240	1.234	11.6*
1,2-Dichloroethane	# 2.278	2.667	2.980	2.662	2.850	2.687	9.9#
1,2-Dichloroethane (total)	1.018	1.349	1.399	1.216	1.324	1.261	12.0
Chloroform	* 2.477	2.956	3.269	2.917	3.171	2.958	10.3*
1,2-Dichloroethane	1.654	1.859	2.204	1.990	2.127	1.967	11.1
Butanone	.009	.021	.040	.042	.042	.031	48.3
1,1,1-Trichloroethane	.539	.651	.760	.690	.709	.670	12.4
Carbon Tetrachloride	.442	.585	.658	.601	.621	.581	14.2
Vinyl Acetate	.488	.618	1.016	1.046	1.037	.841	31.8
Bromodichloromethane	.658	.749	.917	.906	.929	.832	14.6
1,2-Dichloropropane	* .423	.464	.565	.540	.558	.510	12.4*
Cis-1,3-Dichloropropene	.535	.627	.804	.778	.785	.706	16.9
Trichloroethene	.426	.484	.542	.487	.566	.501	11.0
Dibromochloromethane	.624	.718	.959	.915	.923	.828	17.9
1,1,2-Trichloroethane	.347	.356	.462	.444	.447	.411	13.3
Benzene	.854	.971	1.152	1.055	1.087	1.024	11.3
Trans-1,3-Dichloropropene	.362	.382	.543	.525	.530	.468	18.9
Bromoform	# .443	.505	.725	.727	.732	.626	22.4#
4-Methyl-2-Pentanone	.656	.561	.770	.728	.812	.705	14.1
2-Hexanone	.482	.366	.548	.528	.533	.491	15.1
Tetrachloroethene	.408	.572	.573	.490	.536	.516	13.4
1,1,2,2-Tetrachloroethane	# .698	.705	.994	.915	.872	.837	15.6#
Toluene	* .618	.754	.841	.725	.821	.752	11.8*
Chlorobenzene	# .859	1.046	1.180	1.059	1.125	1.054	11.5#
Ethylbenzene	* .370	.482	.526	.453	.494	.465	12.7*
Styrene	.097	.114	.130	.117	.126	.117	11.0
Xylene (total)	.400	.496	.531	.474	.516	.483	10.7
Bromofluorobenzene	.727	.835	.879	.830	.861	.826	7.2
1,2-Dichloroethane-d4	1.513	1.675	1.789	1.698	1.784	1.692	6.6
Toluene-d8	1.017	1.214	1.234	1.151	1.225	1.168	7.8

FORM VI VOA

1/87 Rev.

7A  
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00058

Instrument ID: J J

Calibration Date: 4/15/91

Time: 10:00

Lab File ID: J2231

Init. Calib. Date(s): 4/ 5/91 4/ 5/91

Matrix:(soil/water) WATER Level:(low/med): LOW Column:(pack/cap) PACK

In RRF50 for SPCC(#) = .300 (0.250 for Bromoform) Max %D for CCC(\*) is 25.0%

COMPOUND	RRF	RRF50	%D
Chloromethane	1.019	1.195	17.2
Bromomethane	1.185	1.406	18.7
Vinyl Chloride	1.154	1.429	23.9
Chloroethane	.756	.917	21.3
Methylene Chloride	1.376	1.751	27.3
Acetone	.469	.565	20.6
Carbon Disulfide	3.835	4.802	25.2
1,1-Dichloroethene	1.234	1.510	22.4
1,1-Dichloroethane	2.687	3.054	13.6
1,2-Dichloroethene (total)	1.261	1.614	28.0
Chloroform	2.958	3.334	12.7
1,2-Dichloroethane	1.967	2.052	4.3
2-Butanone	.031	.043	32.2
1,1,1-Trichloroethane	.670	.740	10.6
Carbon Tetrachloride	.581	.652	12.2
Vinyl Acetate	.841	.667	20.7
Bromodichloromethane	.832	.842	1.2
1,2-Dichloropropane	.510	.517	1.5
cis-1,3-Dichloropropene	.706	.718	1.8
Trichloroethene	.501	.561	12.0
Dibromochloromethane	.828	.823	.6
1,1,2-Trichloroethane	.411	.422	2.6
Benzene	1.024	1.175	14.7
trans-1,3-Dichloropropene	.468	.442	5.6
Bromoform	.626	.558	10.9
4-Methyl-2-Pentanone	.705	.585	17.1
2-Hexanone	.491	.337	31.3
Tetrachloroethene	.516	.642	24.4
1,1,2,2-Tetrachloroethane	.837	.857	2.4
Toluene	.752	.914	21.6
Chlorobenzene	1.054	1.281	21.6
Ethylbenzene	.465	.574	23.5
Styrene	.117	.144	23.1
Xylene (total)	.483	.608	25.8
Bromofluorobenzene	.826	.793	4.1
1,2-Dichloroethane-d4	1.692	1.461	13.6
Toluene-d8	1.168	1.181	1.1

→ .148  
→ 43.7%  
→ .103  
8/16/28/91

7A  
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: PACE

Contract:

00062

ab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Instrument ID: J J

Calibration Date: 4/16/91

Time: 9:59

ab File ID: J2245

Init. Calib. Date(s): 4/ 5/91 4/ 5/91

Matrix:(soil/water) WATER Level:(low/med): LOW Column:(pack/cap) PACK

in RRF50 for SPCC(#) = .300 (0.250 for Bromoform) Max %D for CCC(\*) is 25.0%

COMPOUND	RRF	RRF50	%D
Chloromethane	1.019	1.034	1.4
Bromomethane	1.185	1.404	18.5
Vinyl Chloride	1.154	1.330	15.2
Chloroethane	.756	.863	14.2
Methylene Chloride	1.376	1.605	16.6
Acetone	.469	.596	27.1
Carbon Disulfide	3.835	4.575	19.3
1,1-Dichloroethene	1.234	1.474	19.5
1,1-Dichloroethane	2.687	2.896	7.8
1,2-Dichloroethene (total)	1.261	1.507	19.6
Chloroform	2.958	3.279	10.8
1,2-Dichloroethane	1.967	2.010	2.2
2-Butanone	.031	.036	16.8
1,1,1-Trichloroethane	.670	.745	11.3
Carbon Tetrachloride	.581	.657	13.0
Vinyl Acetate	.841	.749	10.9
Bromodichloromethane	.832	.834	.3
1,2-Dichloropropane	.510	.536	5.2
cis-1,3-Dichloropropene	.706	.735	4.1
Trichloroethene	.501	.562	12.2
Dibromochloromethane	.828	.865	4.4
1,1,2-Trichloroethane	.411	.439	6.7
Benzene	1.024	1.141	11.5
trans-1,3-Dichloropropene	.468	.441	5.8
Bromoform	.626	.618	1.3
4-Methyl-2-Pentanone	.705	.664	5.9
2-Hexanone	.491	.410	16.5
Tetrachloroethene	.516	.645	25.1
1,1,2,2-Tetrachloroethane	.837	.952	13.7
Toluene	.752	.876	16.5
Chlorobenzene	1.054	1.237	17.3
Ethylbenzene	.465	.571	22.8
Styrene	.117	.138	18.1
Xylene (total)	.483	.585	21.0
Bromofluorobenzene	.826	.817	1.2
1,2-Dichloroethane-d4	1.692	1.511	10.7
Toluene-d8	1.168	1.213	3.8

→ .124  
→ 20.7  
→ .103  
Eld 6/28/91

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
UNIFIRST TREATMENT SYSTEM TEST  
INORGANIC ANALYSES DATA

Samples Collected 4/11/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Metals analytical data presented for this sample delivery group were good. Positive results for barium, iron and lead (Sample S1-1 only) were estimated. Positive results for zinc in Samples S6-1, S6-2, and R4 were rejected due to field blank contamination. All other results may be used without reservation.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).



UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

Inorganic Data Validation  
for  
Environmental Project Control, Inc.  
Samples Collected 4/11/91

Case Narrative

This group contained seven water samples including one field blank (R-4). All of the samples were analyzed for total metals.

Samples validated in this report are noted below:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-1	2571	4/11/91
S1-2	2572	4/11/91
S6-1	2574	4/11/91
R-1	2575D	4/11/91
R-2	2576MS	4/11/91
R-4	2578	4/11/91
S6-2	2579	4/11/91

The areas reviewed during validation are listed below.

## CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
- IX. ICP Serial Dilution Analysis
- X. Detection Limits
- XI. Sample Result Verification
- XII. Overall Assessment

## Data Validation

### I. Holding Times

All metals analyses were conducted within acceptable holding times.

### II. Calibration

Calibrations for metals were satisfactory.

One of the standards analyzed to establish the calibration curve for AA must be at the CRDL. The CRDL for antimony is 60 ppb, and the highest standard analyzed was 40 ppb. Since antimony was not detected above 10 ppb in any sample, data quality was not affected.

A standard at twice the CRDL was analyzed for ICP analytes. Nickel, silver, and chromium had percent recoveries outside of the +20% criteria. No positive results were reported for these analytes. Detection limits for nickel, silver, and chromium were estimated.

### III. Blanks

No blanks were above the CRDLs or less than the negative CRDLs.

The preparation blank contained nickel (-25.0 ppb) below its negative IDL.

Continuing calibration blanks for vanadium (7.0 and 5.0 ppb) were greater than the IDL.

The field blank contained zinc (10.0 ppb).

Values at or below the action level (five times the highest blank level) were qualified with a "U" at the reported values.

<u>Metal</u>	<u>Sample</u>	<u>Qualified Result</u>
V	S6-2	25.0 U
Zn	S6-1	17.0 U
	R-4	10.0 U
	S6-2	23.0 U

Significant negative concentrations were reported for antimony, lead and copper in calibration blanks. Detection limits were raised for these analytes, and data was qualified as follows:

<u>Metal</u>	<u>Sample</u>	<u>Qualified Result</u>
Sb	S6-1	1.7 U
Pb	S6-1	1.6 U
	S6-2	1.6 U
Cu	S1-1	11.5 U

#### IV. ICP Interference Check Sample

Interference check sample results were satisfactory.

#### V. Matrix Spike Sample Analysis

Matrix spike analyses were satisfactory except for barium and iron. Data were qualified as follows:

<u>Metal</u>	<u>Sample</u>	<u>Qualified Result</u>
Ba	S1-1	22.0 J
	S1-2	21.0 J
	S6-1	18.0 J
	S6-2	18.0 J
	S1-1	375 J
Fe	S1-1	375 J
	S1-2	170 J

#### VI. Duplicate Sample Analysis

Duplicate analyses were satisfactory.

#### VII. Laboratory Control Sample Analyses

Laboratory control sample results were satisfactory.

#### VIII. Furnace Atomic Absorption Analysis

Duplicate injections were performed for all samples and agreed within  $\pm 20\%$ .

The post digestion spike recovery for lead in Sample S1-1 did not meet criteria. The result for lead in this sample was qualified as estimated.

#### IX. ICP Serial Dilution Analysis

Serial dilutions were conducted on Sample S1-1. Results were satisfactory.

#### X. Detection Limits

Instrument detection limits (IDLs) should be less than the contract required detection limits (CRDLs). The IDL reported for mercury is equal to its CRDL. Mercury was not detected in any of the samples, so no data were qualified.

#### XI. Sample Result Verification

Form I's were correct.

#### XII. Overall Assessment

A standard at twice the CRDL was analyzed for ICP analytes. Nickel, silver, and chromium had percent recoveries outside of the  $\pm 20\%$  criteria. No positive results were reported for these analytes. Detection limits for nickel, silver, and chromium were estimated.

The preparation blank contained nickel (-25.0 ppb) below its negative IDL.

Continuing calibration blanks for vanadium (7.0 and 5.0 ppb) were greater than the IDL.

The field blank (RW-4) contained zinc (10.0 ppb).

Values at or below the action level (five times the highest blank level) were qualified with a "U" at the reported values.

Significant negative concentrations were reported for antimony, lead and copper in calibration blanks. Detection limits were raised for these analytes, and data was qualified as less than the raised detection limits.

Matrix spike analyses for were satisfactory except for barium and iron. Positive results were qualified as estimated.

The post digestion spike recovery for lead in Sample S1-1 did not meet criteria. The result for lead in this sample was qualified as estimated.

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

S1-1

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 2571

Level (low/med): LOW

Date Received: 04/12/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	22.0	B	N J	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	84800			P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	5.0	B	11.5 U	P
7439-89-6	Iron	375		N J	P
7439-92-1	Lead	3.3		W J	F
7439-95-4	Magnesium	11800			P
7439-96-5	Manganese	65.0			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U	J	P
7440-09-7	Potassium	3460	B		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	J	P
7440-23-5	Sodium	141000			P
7440-28-0	Thallium	0.70	U		F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	231			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

S1-2

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 2572 00020

Level (low/med): LOW

Date Received: 04/12/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	21.0	B	NJ	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	84500			P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	170		NJ	P
7439-92-1	Lead	4.0			F
7439-95-4	Magnesium	11600			P
7439-96-5	Manganese	20.0			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U	J	P
7440-09-7	Potassium	3210	B		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	J	P
7440-23-5	Sodium	137000			P
7440-28-0	Thallium	0.70	U		F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	212			P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:



## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

S6-1

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 2540021

Level (low/med): LOW

Date Received: 04/12/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	972	-		P
7440-36-0	Antimony	1.6	B	1.7 u	F
7440-38-2	Arsenic	12.5	-		F
7440-39-3	Barium	18.0	B	NJ	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	71200	-		P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	97.7	U	JN	P
7439-92-1	Lead	1.2	B	1.6 u	F
7439-95-4	Magnesium	11900	-		P
7439-96-5	Manganese	5.0	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U	J	P
7440-09-7	Potassium	3430	B		P
7782-49-2	Selenium	0.50	U	N	F
7440-22-4	Silver	8.1	U	J	P
7440-23-5	Sodium	144000	-		P
7440-28-0	Thallium	0.70	U		F
7440-62-2	Vanadium	48.0	B		P
7440-66-6	Zinc	17.0	B	u	P
	Cyanide		-		NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

R4

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 25780022

Level (low/med): LOW

Date Received: 04/12/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	12.5	U	JN	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	448	U		P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	97.7	U	JN	P
7439-92-1	Lead	0.50	U	N	F
7439-95-4	Magnesium	509	U		P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U	J	P
7440-09-7	Potassium	760	U		P
7782-49-2	Selenium	0.50	U	N	F
7440-22-4	Silver	8.1	U	J	P
7440-23-5	Sodium	390	U		P
7440-28-0	Thallium	0.70	U		F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	10	B	u	P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

S6-2

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 2509023

Level (low/med): LOW

Date Received: 04/12/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	849	-		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	5.0	X		F
7440-39-3	Barium	18.0	X	N J	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	79900	-		P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	97.7	U	J N	P
7439-92-1	Lead	0.80	X	1.6 U	F
7439-95-4	Magnesium	12400	-		P
7439-96-5	Manganese	5.0	X		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U	J	P
7440-09-7	Potassium	3720	X		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	J	P
7440-23-5	Sodium	141000	-		P
7440-28-0	Thallium	0.70	U		F
7440-62-2	Vanadium	25.0	X	U	P
7440-66-6	Zinc	23.0	-	U	P
	Cyanide		-		NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
RECOVERY WELL SAMPLING  
INORGANIC ANALYSES DATA

Samples Collected 4/26/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Metals analytical data presented for this sample delivery group were fair. Much of the data was qualified as estimated. In addition, several positive sample results were rejected due to blank contamination. All unqualified sample data may be used without reservation.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).

UJ - The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

Inorganic Data Validation  
for  
Environmental Project Control, Inc.  
Samples Collected 4/26/91

Case Narrative

This group contained three recovery well samples including one field blank to be analyzed for total and dissolved metals.

Samples validated in this report are noted below:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
RW1-6F(Dis)	2965	4/26/91
RW1-6T	2957	4/26/91
RW7-10F(Dis)	2958	4/26/91
RW7-10T	2959	4/26/91
RW7-10FB	2960	4/26/91
RW7-10FB(Dis)	2960	4/26/91

Sample numbers distinguished between the total and dissolved results with a "T" (total) or "F" (filtered). Dissolved results were also indicated on the Form I's with a note under "Comments."

The areas reviewed during validation are listed below.

## CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
- IX. ICP Serial Dilution Analysis
- X. Detection Limits
- XI. Sample Result Verification
- XII. Other QC
- XIII. Overall Assessment



### I. Holding Times

All metals analyses were conducted within acceptable holding times.

### II. Calibration

Calibrations for metals were satisfactory.

One of the standards analyzed to establish the calibration curve for AA must be at the CRDL. The CRDL for antimony is 60 ppb, and the highest standard analyzed was 45 ppb. Since antimony was not detected above 20 ppb in any sample (including the matrix spike), data quality was not affected.

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within + 20% of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for cadmium, chromium, and silver were estimated.

### III. Blanks

No preparation or calibration blanks were above the CRDLs or less than the negative CRDLs.

The preparation blank contained vanadium (-5.0) below its negative IDL and antimony (1.10) greater than its IPL.

Continuing calibration blank for antimony (1.0 ppb) and zinc (3.0 ppb) were greater than the IDLs.

The field blank for dissolved metals contained zinc (12 ppb). The field blank for total metals contained calcium (490 ppb), iron (172 ppb), manganese (5 ppb), sodium (618 ppb), and zinc (42 ppb).

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Zinc and antimony results were qualified as less than the reported values (U). Calcium, iron, manganese, and sodium results (total metals) were qualified as less than the reported values (U).

Because of the negative blank values reported for vanadium, detection limits were raised. All vanadium detection limits were raised to 9.2 U.

#### **IV. ICP Interference Check Sample**

Interference check sample results were satisfactory.

#### **V. Matrix Spike Sample Analysis**

Matrix spike analyses for dissolved metals were satisfactory except for arsenic (64.5% recovery), barium (53.2% recovery), iron (128% recovery), and selenium (74% recovery). Positive results for the above analytes were qualified as estimated (J). Detection limits for dissolved arsenic, barium, and selenium were qualified as estimated (UJ).

Matrix spike analyses for total metals were satisfactory except for barium (54.3% recovery), lead (51.5% recovery), manganese (131.8% recovery), selenium (62% recovery), and thallium (64.8% recovery). All positive results for the above analytes were qualified as estimated (J). Detection limits for barium, lead, selenium, and thallium were estimated (UJ).

#### **VI. Duplicate Sample Analysis**

Duplicate analyses for dissolved metals were satisfactory with the exception of zinc which had a RPD of 75.3. Zinc results for dissolved metals were estimated (J).

Duplicate analyses for total metals were satisfactory with the exception of copper (RPD 127), iron (RPD 78.9), lead (RPD 39.5), manganese (RPD 106.4), sodium (RPD 23.2), and zinc (48.4 RPD). Positive total metals results for copper, iron, lead, manganese, sodium, and zinc were qualified as estimated.

#### **VII. Laboratory Control Sample Analyses**

Laboratory control sample results were satisfactory.

#### **VIII. Furnace Atomic Absorption Analysis**

Duplicate injections were performed for all samples and agreed within  $\pm 20\%$ .

The method of standard additions was conducted for RW7-10FB (lead). Results were satisfactory.

#### IX. ICP Serial Dilution Analysis

Serial dilutions were conducted on RW7-10. All results met the validation criteria of 15% with the exception of calcium (22.7% D), iron (86.1% D), and magnesium (23.8% D). Positive results and detection limits for the analytes were estimated.

#### X. Detection Limits

Instrument detection limits (IDLs) should be less than the contract required detection limits (CRDLs). The IDL reported for mercury is equal to its CRDL. Mercury was not detected in any of the samples, so no data were qualified.

#### XI. Sample Result Verification

Sample results were acceptable as qualified.

#### XII. Other QC

Samples were analyzed for total and dissolved metals. In some instances, the dissolved result was higher than the total result by more than experimental error. These data were qualified for both total and dissolved metals as indicated below:

<u>Sample</u>	<u>Analyte</u>	<u>Dissolved</u>	<u>Total</u>	<u>Action</u>
RW1-6	As	7.1	2.8	R
	K	5860	5150	J
	Na	33100	29200	J

#### XIII. Overall Assessment

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within  $\pm 20\%$  of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for cadmium, chromium, and silver were estimated.

The field blank for dissolved metals contained zinc (12 ppb). The field blank for total metals contained calcium (490 ppb), iron (172 ppb), manganese (5 ppb), sodium (618 ppb), and zinc (42 ppb).

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Zinc and antimony results were qualified as less than the reported values (U), as were calcium, iron, manganese, and sodium results (total metals).

Because of the negative blank values reported for vanadium, detection limits were raised. All vanadium detection limits were raised to 9.2 U.

Matrix spike analyses for dissolved metals were satisfactory except for arsenic (64.5% recovery), barium (53.2% recovery), iron (128% recovery), and selenium (74% recovery). Positive

results for the above analytes were qualified as estimated (J). Detection limits for dissolved arsenic, barium, and selenium were qualified as estimated (UJ).

Matrix spike analyses for total metals were satisfactory except for barium (54.3% recovery), lead (51.5% recovery), manganese (131.8% recovery), selenium (62% recovery), and thallium (64.8% recovery). All positive results for the above analytes were qualified as estimated (J). Detection limits for barium, lead, selenium, and thallium were estimated (UJ).

Duplicate analyses for dissolved metals were satisfactory with the exception of zinc which had a RPD of 75.3. Zinc results for dissolved metals were estimated (J).

Duplicate analyses for total metals were satisfactory with the exception of copper (RPD 127), iron (RPD 78.9), lead (RPD 39.5), manganese (RPD 106.4), sodium (RPD 23.2), and zinc (48.4 RPD). Positive total metals results for copper, iron, lead, manganese, sodium, and zinc were qualified as estimated.

Samples were analyzed for total and dissolved metals. In some instances, the dissolved result was higher than the total result by more than experimental error. These data were qualified for both total and dissolved metals as indicated below:

<u>Sample</u>	<u>Analyte</u>	<u>Dissolved</u>	<u>Total</u>	<u>Action</u>
RW1-6	As	7.1	2.8	J
	K	5860	5150	J
	Na	33100	29200	J

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00018

RW1-6F

Lab Name: PACE\_INCORPORATED

Contract: EPC

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: RW7-10

Matrix (soil/water): WATER

Lab Sample ID: 2956.8

Level (low/med): LOW

Date Received: 04/27/91

Solids: \_\_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.1	B	N	F
7440-39-3	Barium	31.0	B	N	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	36900		E	P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	390		N	F
7439-92-1	Lead	0.50	U		P
7439-95-4	Magnesium	10100			P
7439-96-5	Manganese	1010		E	P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	5860			P
7782-49-2	Selenium	0.50	U	N	F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	33100			P
7440-28-0	Thallium	0.70	U	WN	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	44.0		*	P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR

Artifacts: \_\_\_\_\_

Comments:

THIS\_SAMPLE\_WAS\_ANALYZED\_AS\_A DISSOLVED METAL.

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00019

RW1-6T

Lab Name: PACE\_INCORPORATED

Contract: EPC

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: RW7-10

Matrix (soil/water): WATER

Lab Sample ID: 2957.6

Level (low/med): LOW

Date Received: 04/27/91

Solids: \_\_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1760	-	-	P
7440-36-0	Antimony	1.1	B	-	F
7440-38-2	Arsenic	2.8	B	-	F
7440-39-3	Barium	39.0	B	N	P
7440-41-7	Beryllium	1.1	U	-	P
7440-43-9	Cadmium	3.0	U	-	P
7440-70-2	Calcium	38800	-	E	P
7440-47-3	Chromium	12.0	-	-	P
7440-48-4	Cobalt	6.4	U	-	P
7440-50-8	Copper	4.5	U	*	P
7439-89-6	Iron	3470	-	E*	P
7439-92-1	Lead	1.1	B	N*	F
7439-95-4	Magnesium	10400	-	-	P
7439-96-5	Manganese	1040	-	EN*	P
7439-97-6	Mercury	0.20	U	-	CV
7440-02-0	Nickel	10	B	-	P
7440-09-7	Potassium	5150	-	-	P
7782-49-2	Selenium	0.50	U	WN	F
7440-22-4	Silver	8.1	U	-	P
7440-23-5	Sodium	29200	-	*	P
7440-28-0	Thallium	0.70	U	N	F
7440-62-2	Vanadium	4.2	U	-	P
7440-66-6	Zinc	33.0	-	*	P
	Cyanide		-	-	NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR

Artifacts: \_\_\_\_\_

Comments:

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00020

RW7-10F

Lab Name: PACE\_INCORPORATED

Contract: EPC

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: RW7-10

Matrix (soil/water): WATER

Lab Sample ID: 2958.4

Level (low/med): LOW

Date Received: 04/27/91

% Solids: \_\_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.90	B		F
7440-38-2	Arsenic	1.0	U	WN	F
7440-39-3	Barium	26.0	B	N	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	40900		E	P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	1540		N	P
7439-92-1	Lead	0.50	U		F
7439-95-4	Magnesium	7520			P
7439-96-5	Manganese	570		E	P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	8840			P
7782-49-2	Selenium	0.50	U	WN	F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	38000			P
7440-28-0	Thallium	0.70	U	N	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	24.0		*	P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR

Artifacts: \_\_\_\_\_

## Comments:

THIS\_SAMPLE\_WAS\_ANALYZED\_AS\_A DISSOLVED METAL.

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00021

RW7-10T

Lab Name: PACE\_INCORPORATED

Contract: EPC

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: RW7-10

Matrix (soil/water): WATER

Lab Sample ID: 2959.2

Level (low/med): LOW

Date Received: 04/27/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	216	-	-	P
7440-36-0	Antimony	1.0	B	-	F
7440-38-2	Arsenic	1.0	U	-	F
7440-39-3	Barium	24.0	B	N	P
7440-41-7	Beryllium	1.1	U	-	P
7440-43-9	Cadmium	3.0	U	-	P
7440-70-2	Calcium	40300	-	E	P
7440-47-3	Chromium	9.5	U	-	P
7440-48-4	Cobalt	6.4	U	-	P
7440-50-8	Copper	36.0	-	*	P
7439-89-6	Iron	12500	-	E*	P
7439-92-1	Lead	12.4	-	SN*	F
7439-95-4	Magnesium	7390	-	-	P
7439-96-5	Manganese	831	-	EN*	P
7439-97-6	Mercury	0.20	U	-	CV
7440-02-0	Nickel	8.6	U	-	P
7440-09-7	Potassium	8640	-	-	P
7782-49-2	Selenium	0.50	U	WN	F
7440-22-4	Silver	8.1	U	-	P
7440-23-5	Sodium	39500	-	*	P
7440-28-0	Thallium	0.70	U	WN	F
7440-62-2	Vanadium	4.2	U	-	P
7440-66-6	Zinc	77.0	-	*	P
	Cyanide		-	-	NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: \_\_\_\_\_

Color After: LT\_YELLOW

Clarity After: CLEAR

Artifacts: \_\_\_\_\_

Comments:



## INORGANIC ANALYSES DATA SHEET

00022

RW7-10FB

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: RW7-10

Matrix (soil/water): WATER

Lab Sample ID: 2960.6

Level (low/med): LOW

Date Received: 04/27/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	12.5	U		P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	490	B		P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	172			P
7439-92-1	Lead	0.50	U		F
7439-95-4	Magnesium	509	U		P
7439-96-5	Manganese	5.0	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	760	U		P
7782-49-2	Selenium	0.50	U	W	F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	618	B		P
7440-28-0	Thallium	0.70	U		F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	42.0			P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00023

RW7-10FB

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: RW7-10

Matrix (soil/water): WATER

Lab Sample ID: 2960.6

Level (low/med): LOW

Date Received: 04/27/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	12.5	U		P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	448	U		P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	0.50	U		F
7439-95-4	Magnesium	509	U		P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	760	U		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	390	U		P
7440-28-0	Thallium	0.70	U		F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	12.0	U		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

## Comments:

THIS\_SAMPLE\_WAS\_ANALYZED\_AS\_A DISSOLVED METAL.

## INORGANIC ANALYSES DATA SHEET

00018

RW1-6F

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: RW7-10

Matrix (soil/water): WATER

Lab Sample ID: 2956.8

Level (low/med): LOW

Date Received: 04/27/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.1	B	N	F
7440-39-3	Barium	31.0	B	N	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	36900		E	P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	390		N	P
7439-92-1	Lead	0.50	U		F
7439-95-4	Magnesium	10100			P
7439-96-5	Manganese	1010		E	P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	5860			P
7782-49-2	Selenium	0.50	U	N	F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	33100			P
7440-28-0	Thallium	0.70	U	WN	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	44.0		N	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

## Comments:

THIS SAMPLE WAS ANALYZED AS A DISSOLVED METAL.

## INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00019

RW1-6T

Lab Name: PACE INCORPORATED

Contract: EPC

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: RW7-10

Matrix (soil/water): WATER

Lab Sample ID: 2957.6

Level (low/med): LOW

Date Received: 04/27/91

Solids: \_\_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1760	-	-	P
7440-36-0	Antimony	1.1	B	-	F
7440-38-2	Arsenic	2.8	B	-	F
7440-39-3	Barium	39.0	B	N	P
7440-41-7	Beryllium	1.1	U	-	P
7440-43-9	Cadmium	3.0	U	-	P
7440-70-2	Calcium	38800	-	E	P
7440-47-3	Chromium	12.0	-	-	P
7440-48-4	Cobalt	6.4	U	-	P
7440-50-8	Copper	4.5	U	*	P
7439-89-6	Iron	3470	-	E*	P
7439-92-1	Lead	1.1	B	N*	F
7439-95-4	Magnesium	10400	-	-	P
7439-96-5	Manganese	1040	-	EN*	P
7439-97-6	Mercury	0.20	U	-	CV
7440-02-0	Nickel	10	B	-	P
7440-09-7	Potassium	5150	-	-	P
7782-49-2	Selenium	0.50	U	WN	F
7440-22-4	Silver	8.1	U	-	P
7440-23-5	Sodium	29200	-	*	P
7440-28-0	Thallium	0.70	U	N	F
7440-62-2	Vanadium	4.2	U	-	P
7440-66-6	Zinc	33.0	-	*	P
	Cyanide		-	-	NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR

Artifacts: \_\_\_\_\_

Comments:

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00020

RW7-10F

Lab Name: PACE\_INCORPORATED\_\_\_\_\_ Contract: EPC\_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: RW7-10

Matrix (soil/water): WATER

Lab Sample ID: 2958.4\_\_\_\_\_

Level (low/med): LOW\_\_\_\_\_

Date Received: 04/27/91

Solids: \_\_\_\_\_ 0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.90	B		F
7440-38-2	Arsenic	1.0	U	WN	F
7440-39-3	Barium	26.0	B	N	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	40900		E	P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	1540		N	P
7439-92-1	Lead	0.50	U		F
7439-95-4	Magnesium	7520			P
7439-96-5	Manganese	570		E	P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	8840			P
7782-49-2	Selenium	0.50	U	WN	F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	38000			P
7440-28-0	Thallium	0.70	U	N	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	24.0		*	P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR\_

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR\_

Artifacts: \_\_\_\_\_

## Comments:

THIS\_SAMPLE\_WAS\_ANALYZED\_AS\_A DISSOLVED METAL. \_\_\_\_\_

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00021

RW7-10T

Lab Name: PACE\_INCORPORATED

Contract: EPC

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: RW7-10

Matrix (soil/water): WATER

Lab Sample ID: 2959.2

Level (low/med): LOW

Date Received: 04/27/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	216	-	-	P
7440-36-0	Antimony	1.0	B	-	F
7440-38-2	Arsenic	1.0	U	-	F
7440-39-3	Barium	24.0	B	N	P
7440-41-7	Beryllium	1.1	U	-	P
7440-43-9	Cadmium	3.0	U	-	P
7440-70-2	Calcium	40300	-	E	P
7440-47-3	Chromium	9.5	U	-	P
7440-48-4	Cobalt	6.4	U	-	P
7440-50-8	Copper	36.0	-	*	P
7439-89-6	Iron	12500	-	E*	P
7439-92-1	Lead	12.4	-	SN*	F
7439-95-4	Magnesium	7390	-	-	P
7439-96-5	Manganese	831	-	EN*	P
7439-97-6	Mercury	0.20	U	-	CV
7440-02-0	Nickel	8.6	U	-	P
7440-09-7	Potassium	8640	-	-	P
7782-49-2	Selenium	0.50	U	WN	F
7440-22-4	Silver	8.1	U	-	P
7440-23-5	Sodium	39500	-	*	P
7440-28-0	Thallium	0.70	U	WN	F
7440-62-2	Vanadium	4.2	U	-	P
7440-66-6	Zinc	77.0	-	*	P
	Cyanide		-	-	NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: \_\_\_\_\_

Color After: LT\_YELLOW

Clarity After: CLEAR

Artifacts: \_\_\_\_\_

Comments:

## INORGANIC ANALYSES DATA SHEET

00022

RW7-10FB

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: RW7-10

Matrix (soil/water): WATER

Lab Sample ID: 2960.6

Level (low/med): LOW

Date Received: 04/27/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	12.5	U		P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	490	B		P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	172			P
7439-92-1	Lead	0.50	U		F
7439-95-4	Magnesium	509	U		P
7439-96-5	Manganese	5.0	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	760	U		P
7782-49-2	Selenium	0.50	U	W	F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	618	B		P
7440-28-0	Thallium	0.70	U		F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	42.0			P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00023

RW7-10FB

Lab Name: PACE\_INCORPORATED\_\_\_\_\_ Contract: EPC\_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: RW7-10

Matrix (soil/water): WATER

Lab Sample ID: 2960.6\_\_\_\_\_

Level (low/med): LOW\_\_\_\_\_

Date Received: 04/27/91

\* Solids: \_\_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	12.5	U		P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	448	U		P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	0.50	U		F
7439-95-4	Magnesium	509	U		P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	760	U		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	390	U		P
7440-28-0	Thallium	0.70	U		F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	12.0	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR\_\_\_\_\_ Texture: \_\_\_\_\_

Color After: COLORLESS Clarity After: CLEAR\_\_\_\_\_ Artifacts: \_\_\_\_\_

## Comments:

THIS\_SAMPLE\_WAS\_ANALYZED\_AS\_A DISSOLVED METAL. \_\_\_\_\_





DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

AREAL SAMPLING

VOLATILES ANALYSES DATA

Samples Collected 04/29/91

Chemical Analyses Performed By

PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY



Trichloroethene, tetrachloroethene, acetone, 1,1-dichloroethane, total 1,2-dichloroethene and acetone are the only valid target compound detected. Acetone and toluene are common laboratory contaminants. These compounds were not detected in the associated method blanks but are probably attributable to the analytical system. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

Data Validation for  
Environmental Project Control, Inc.

Samples Collected April 29, 1991

Volatiles Analyses Data

Case Narrative

One groundwater system sample was collected April 29, 1991 and submitted to Pace, Inc. April 30, 1991. The laboratory was requested to perform purgeable volatile target compound list (TCL) analyses.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  range may adversely affect the more volatile compounds.

Trichloroethene, tetrachloroethene, acetone, 1,1-dichloroethane, total 1,2-dichloroethene and acetone are the only valid target compounds detected. Acetone and toluene are common laboratory contaminants. These compounds were not detected in the associated method blanks but are probably attributable to the analytical system. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

The sample included in this Sample Delivery Group (SDG) is:

<u>Lab ID</u>	<u>Client ID</u>	<u>Date of Collection</u>
2977	AUG12-2	04/29/91

The areas reviewed during validation are listed below.

## ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment of Data for a Case

## DATA VALIDATION

### I. Sample Holding Times

All samples were analyzed within holding time.

### II. Instrument Performance

Inst. J met bromofluorobenzene (BFB) ion abundance criteria on 04/24/91 1158, 05/05/91 1034, 05/05/91 2110, and 05/06/91 0934.

### III. Calibration

The areas for some internal standards and target compounds were manually integrated. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. This validation has been completed on the assumption that the manual integrations as done and reported by the laboratory were valid and correct. Sample data were not affected.

#### Initial Calibration 04/24/91 Inst J

The associated samples are AUG12-2, AUG12-2RE, AUG12-2MS, and AUG12-2MSD.

All compounds met the 0.10 response factor criteria established for this project.

Response factors and percent relative standard deviation (%RSD) for trans 1,3-dichloropropene cannot be calculated from the quantitation reports. This compound was not detected but the non-detects in the associated samples have been qualified as estimates.

The following compounds failed to meet %RSD criteria:

2-butanone (34%)  
1,1,1-trichloroethane (75%)  
carbon tetrachloride (86%)

These compounds were not detected but the non-detects were qualified as estimates.

#### Continuing Calibration 05/05/91 1108 Inst. J

The associated sample is AUG12-2.

All compounds met the 0.10 relative response factor criteria established for the project.

The following compounds failed to meet the 25% difference (D) criteria:

2-butanone (26%)  
carbon tetrachloride (81%)

These compounds were not detected and non-detect for carbon tetrachloride was previously qualified as an estimate. No other data were qualified.

Continuing Calibration 05/05/91 2144 Inst. J

The associated sample is AUG12-2RE.

Carbon tetrachloride failed to meet the 0.10 minimum RRF criteria. This compound was not detected but the non-detect has been rejected in the associated sample.

Carbon tetrachloride at 82% failed to meet the 25% difference criteria. The non-detect for this compound was previously rejected.

Continuing Calibration 05/06/91 1010 Inst. J

The associated samples are AUG12-2MS and AUG12-2MSD.

Carbon tetrachloride failed to meet the 0.10 minimum RRF criteria. This compound was not detected but the non-detects in the associated samples were rejected.

Carbon tetrachloride at 81% failed to meet the 25% difference criteria. The non-detects in the associated samples were previously rejected.

#### IV. Blanks

Methylene chloride and 4-methyl-2-pentanone detected in VBK01.

Methylene chloride was detected in VBLK02 and VBLK03.

The concentrations of methylene chloride in the blanks was sufficient to qualify all methylene chloride results in the associated samples as less than the reported values.

4-Methyl-2-pentanone was not detected in the sample analyses.

#### **V. Surrogate Recovery**

All surrogate recoveries were within control limits.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

All matrix spike recoveries are within the established QC limits. The Relative Percent Difference (RPD) between matrix spike (MS) and matrix spike duplicate (MSD) recoveries are within the established QC limits.

#### **VII. Field Quality Control Samples**

No field quality control samples were submitted with this sample.

#### **VIII. Internal Standards Performance**

All retention times (RT) and internal standard (IS) areas are acceptable.

#### **IX. TCL Compound Identification**

Compound identifications are acceptable.

#### **X. Compound Quantitation and Reported Detection Limits**

Sample AUG12-2 had to be reanalyzed at a dilution to bring the concentration of tetrachloroethene within the calibration range of the instrument. The concentration of tetrachloroethene reported in AUG12-2 was rejected; the concentration reported in the rerun was acceptable.

All other results and detection limit quantitations are acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were detected.

#### **XII. System Performance**

System performance is acceptable.

### **XIII. Overall Assessment of Data for a Case**

Trichloroethene, tetrachloroethene, acetone, 1,1-dichloroethane, total 1,2-dichloroethene and acetone are the only valid target compound detected. Acetone and toluene are common laboratory contaminants. These compounds were not detected in the associated method blanks but are probably attributable to the analytical system. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

AUG12-2000

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 2977.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2450

Level: (low/med) LOW

Date Received: 4/30/91

Moisture: not dec.100.

Date Analyzed: 5/ 5/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	31.	BU
67-64-1-----	Acetone	100.	
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	8.	
540-59-0-----	1,2-Dichloroethene (total)	25.	
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	5.	UJ
56-23-5-----	Carbon Tetrachloride	5.	UJ
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	120.	
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U
10061-02-6-----	trans-1,3-Dichloropropene	5.	U5
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	550.	FR
79-34-5-----	1,1,2,2-Tetrachloroethane	510.	U
108-88-3-----	Toluene	2.	J
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene (total)	5.	U

6/23/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

AUG 12-2, 2

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 2977.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2450

Level: (low/med) LOW

Date Received: 4/30/91

% Moisture: not dec.100.

Date Analyzed: 5/ 5/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

'A SAMPLE NO.

AUG12-2' RE

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 2977.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2461

Level: (low/med) LOW

Date Received: 4/30/91

Moisture: not dec.100.

Date Analyzed: 5/ 6/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	50.	U
74-83-9-----	Bromomethane	50.	U
75-01-4-----	Vinyl Chloride	50.	U
75-00-3-----	Chloroethane	50.	U
75-09-2-----	Methylene Chloride	86.	BU
67-64-1-----	Acetone	83.	
75-15-0-----	Carbon Disulfide	25.	U
75-35-4-----	1,1-Dichloroethene	25.	U
75-34-3-----	1,1-Dichloroethane	25.	U
540-59-0-----	1,2-Dichloroethene (total)	25.	U
67-66-3-----	Chloroform	25.	U
107-06-2-----	1,2-Dichloroethane	25.	U
78-93-3-----	2-Butanone	50.	U
71-55-6-----	1,1,1-Trichloroethane	25.	UJ
56-23-5-----	Carbon Tetrachloride	25.	UR
108-05-4-----	Vinyl Acetate	50.	U
75-27-4-----	Bromodichloromethane	25.	U
78-87-5-----	1,2-Dichloropropane	25.	U
10061-01-5-----	cis-1,3-Dichloropropene	25.	U
79-01-6-----	Trichloroethene	110.	
124-48-1-----	Dibromochloromethane	25.	U
79-00-5-----	1,1,2-Trichloroethane	25.	U
71-43-2-----	Benzene	25.	U
10061-02-6-----	trans-1,3-Dichloropropene	25.	U
75-25-2-----	Bromoform	25.	U
108-10-1-----	4-Methyl-2-Pentanone	50.	U
591-78-6-----	2-Hexanone	50.	U
127-18-4-----	Tetrachloroethene	480.	
79-34-5-----	1,1,2,2-Tetrachloroethane	25.	U
108-88-3-----	Toluene	25.	U
108-90-7-----	Chlorobenzene	25.	U
100-41-4-----	Ethylbenzene	25.	U
100-42-5-----	Styrene	25.	U
1330-20-7-----	Xylene(total)	25.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
RELATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

AUG12-2 RE

4

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 2977.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2461

Level: (low/med) LOW

Date Received: 4/30/91

Moisture: not dec.100.

Date Analyzed: 5/ 6/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 4/30/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Data quality for this sample delivery group was excellent. Positive methylene chloride results reported in Samples S1-3, S1-3DUP, and the trip blank were qualified as less than the reported values. Detection limits for aromatic compounds were qualified as estimated. These samples were apparently shipped via overnight courier; however, this information was not provided on the chain of custody forms.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Five samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on April 30, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
Trip Blank	3032	04/30/91
S1-3	3033	04/30/91
S1-3 DUP	3034	04/30/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



## **I. Holding Times**

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimates for all three samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### **A. Initial**

Initial calibration criteria were met on 4/24/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/8/91 with the exception of the % difference for 2-butanone (actual 31.7; criteria 25). Data were not affected.

## **IV. Blanks**

Methylene chloride was reported in the method blank and the trip blank. Methylene chloride results for Samples S1-3 and S1-3 DUP and the trip blank were qualified as less than the reported values.

## **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

## **VI. Matrix Spike/Matrix Spike Duplicate**

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S1-3. Data were within acceptance criteria.

## VII. Field Duplicates



Compounds and concentrations (ug/L) reported in Samples S1-3 and S1-3 DUP were as follows:

Compound	S1-3	S1-3 DUP
Trichloroethene	4	3
Tetrachloroethene	26	24
Acetone	3	

Because acetone was found in only one of the duplicate samples, the value reported for acetone in Sample S1-3 was rejected. Other data were within acceptance criteria.

## VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

TCL compound identifications were acceptable.

## X. Compound Quantitation and Reported Detection Limits

Results and detection limits were acceptable with regard to the supporting data.

## XI. Tentatively Identified Compounds

No TICs were reported for this SDG.

## XII. System Performance

System performance requires attention. Manual integrations should be addressed. All samples were analyzed outside the required holding time.

## XIII. Overall Assessment of Data for a Case

Data quality for this sample delivery group was excellent. Values reported for methylene chloride were qualified as less than the reported values due to laboratory contamination. Detection limits for aromatic compounds were estimated in all samples. The samples were apparently shipped to the laboratory via overnight courier; however, this information is not provided on the chain of custody forms.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

TPA SAMPLE NO.  
Tri Blank  
3032  
00020

Lab Name: PACE

Contract: J

Lab Code: PACE

Case No.: M&E

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2495

Level: (low/med) LOW

Date Received: 5/ 1/91

% Moisture: not dec.100.

Date Analyzed: 5/ 8/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/L
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	8.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-42-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
T: ACTIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

*Trip Blank*

3032

Lab Name: PACE

Contract: J

Lab Code: PACE

Case No.: M&E

SAS No.:

SDG No.:

00021

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2495

Level: (low/med) LOW

Date Received: 5/ 1/91

Moisture: not dec.100.

Date Analyzed: 5/ 8/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
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1A  
VOL ILE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO.

51-3

3033

00026

Lab Name: PACE

Contract: 1

Lab Code: PACE

Case No.: M&E

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2500

Level: (low/med) LOW

Date Received: 5/ 1/91

% Moisture: not dec.100.

Date Analyzed: 5/ 8/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L 0

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	3.	U
67-64-1-----	Acetone	2.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	4.	J
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	26.	
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene (total)	5.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

51-3

3033

00027

Lab Name: PACE

Contract: J

Lab Code: PACE

Case No.: M&E

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2500

Level: (low/med) LOW

Date Received: 5/ 1/91

Moisture: not dec.100.

Date Analyzed: 5/ 8/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
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1A  
VOL ILE ORGANICS ANALYSIS DATA SHEET

TPA SAMPLE NO.

51-3 Dup

3034

00035

Lab Name: PACE

Contract: J

Lab Code: PACE

Case No.: M&E

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2503

Level: (low/med) LOW

Date Received: 5/ 1/91

% Moisture: not dec.100.

Date Analyzed: 5/ 8/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/L
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	3.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	3.	J
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	24.	
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
T. ACTIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

51-3 Dup

3034

Lab Name: PACE

Contract: J

Lab Code: PACE

Case No.: M&E

SAS No.:

SDG No.:

00036

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2503

Level: (low/med) LOW

Date Received: 5/ 1/91

% Moisture: not dec.100.

Date Analyzed: 5/ 8/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
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DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 04/30/91

Chemical Analyses Performed By

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

No target compounds were detected. All non-detects were qualified as estimates due to the manual integration of areas for all three internal standards and the majority of the target compounds. Documentation to support these manual integrations has been requested from the laboratory. When received the data will be re-evaluated.

No data was provided for sample S4-1. No explanation was provided by the laboratory.

There appear to be multiple sets of chain-of-custody records in this data package. Not all of the forms are signed by the laboratory. This will need to be addressed to provide defensible data.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

Data Validation for  
Environmental Project Control, Inc.

Samples Collected April 30, 1991

Volatiles Analyses Data

Method 524.2 Analyses

**Case Narrative**

Seven treatment system samples were collected April 30, 1991 and submitted to Pace, Inc. May 1, 1991. The laboratory was requested to perform purgeable volatile analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  range may adversely affect the more volatile compounds.

No target compounds were detected. All non-detects have been qualified as estimates due to manual integration of internal standard and target compound areas. No data were provided for sample S4-1 and no explanation was given by the laboratory.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3017	Trip Blank	04/30/91
3018	S3-1	04/30/91
3019	S4-1	04/30/91
3020	S5-1	04/30/91
3021	S6-3	04/30/91
3022	S6-3 Dup	04/30/91
3023	Field Blank	04/30/91

The areas reviewed during validation are listed below.

## ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment of Data for a Case

## DATA VALIDATION

### I. Sample Holding Times

All samples were analyzed outside the 7-day holding time for non-preserved samples but within the 14-day holding time for aqueous volatile samples. Detection limits for aromatic compounds were qualified as estimates for all samples.

### II. Instrument Performance

Inst. F met bromofluorobenzene (BFB) ion abundance criteria on 05/11/91 1632, 05/12/91 1423, 05/13/91 1016, and 05/14/91 1038.

### III. Calibration

The areas for all internal standards and most of the target compounds were manually integrated. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. This validation has been completed on the assumption that the manual integrations as done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all affected compounds for the associated samples have been qualified as estimates.

#### Initial Calibration 05/12/91 Inst F

The associated samples are trip blank, S3-1, S5-1, S6-3, S6-3Dup, S6-3MS, S6-3MSD, and Field Blank.

All compounds met the 0.10 response factor criteria established for this project.

All compounds met the 30% relative standard deviation (%RSD) criteria.

Continuing Calibration 05/12/91 1151 on Inst. F met criteria with the exception of the percent difference (%D) for trans-1,3-dichloropropene (35%). This compound was not detected and no data were qualified.

Continuing Calibration criteria were met on 05/13/91 1107 and 05/14/91 1201 on Inst. F.

#### **IV. Blanks**

No target compounds were detected in the three method blanks, the trip blank or the field blank.

#### **V. Surrogate Recovery**

All surrogate recoveries were within control limits with the exception of sample S5-1. The surrogates were not added to the sample by the laboratory. Reanalysis could not be performed. No target compounds were detected, but the non-detects have been qualified as estimates.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

All matrix spike recoveries are within the established QC limits.

The Relative Percent Difference (RPD) between matrix spike (MS) and matrix spike duplicate (MSD) recoveries are within the established QC limits with the exceptions of toluene and chlorobenzene. These compounds were not detected in the unspiked sample and no data have been qualified.

#### **VII. Field Quality Control Samples**

Sample S6-3 and S6-3Dup were submitted as duplicate samples. No target compounds were detected in either sample.

No target compounds were detected in the field or trip blank.

#### **VIII. Internal Standards Performance**

All retention times (RT) and internal standard (IS) areas are acceptable.

#### **IX. TCL Compound Identification**

No compounds were detected.

#### **X. Compound Quantitation and Reported Detection Limits**

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on

October 15, 1990. Method detection limits (MDLs) determined by the PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined by the PQL study are as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
vinyl chloride	0.48
chloroethane	0.49
methylene chloride	4.41
1,1-dichloroethene	0.67
1,1-dichloroethane	0.54
trans-1,2-dichloroethene	0.50
chloroform	0.53
1,2-dichloroethane	0.52
1,1,1-trichloroethane	0.44
carbon tetrachloride	0.43
bromodichloromethane	0.38
1,2-dichloropropane	0.45
cis-1,3-dichloropropene	0.33
trichloroethene	0.42
dibromochloromethane	0.33
1,1,2-trichloroethane	0.43
benzene	0.58
trans-1,3-dichloropropene	0.07
bromoform	0.49
tetrachloroethene	0.51
1,1,2,2-tetrachloroethane	0.44
toluene	0.45
chlorobenzene	0.44
ethylbenzene	0.51
m-xylene	0.48
o-, p-xylene	0.93
1,2-dichloroethane-d4	0.50
toluene-d8	0.45
bromofluorobenzene	0.36

The above MDLs should be applied to these data.

#### **XI. Tentatively Identified Compounds**

No TICs were detected in this sample delivery group.

#### **XII. System Performance**

System performance was acceptable.

### XIII. Overall Assessment of Data for a Case

No target compounds were detected. All non-detects have been qualified as estimates due to manual integration of internal standard and target compound areas. No data were provided for sample S4-1 and no explanation was given by the laboratory.



Unifirst

PACE Project Number: 810501508

00034

PACE Sample Number:

95 0030175

Date Collected:

04/30/91

Date Received:

05/01/91

Parameter

Units

MDL

TRIP BLANK

ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	u5
Chloroethane	ug/L	0.5	ND	u5
Methylene chloride	ug/L	0.5	ND	u5
1,1-Dichloroethene	ug/L	0.5	ND	1
1,1-Dichloroethane	ug/L	0.5	ND	u5
trans-1,2-Dichloroethene	ug/L	0.5	ND	u5
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	u5
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	u5
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	u5
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	u5
Xylene, total	ug/L	0.5	ND	1

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810501508 00038

PACE Sample Number:

95 0030183

Date Collected:

04/30/91

Date Received:

05/01/91

ParameterUnitsMDLS3-1ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND u5
Chloroethane	ug/L	0.5	ND u5
Methylene chloride	ug/L	0.5	ND u5
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND u5
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND u5
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND u5
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND u5
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND u5
Xylene, total	ug/L	0.5	ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810501508 00042

PACE Sample Number:

95 0030205

Date Collected:

04/30/91

Date Received:

05/01/91

Parameter

Units

MDL

S5-1

ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND u5
Chloroethane	ug/L	0.5	ND u5
Methylene chloride	ug/L	0.5	ND u5
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND u5
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND u5
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND u5
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND u5
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND u5
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

Unifirst

PACE Project Number: 810501500 0046

PACE Sample Number:

95 0030213

Date Collected:

04/30/91

Date Received:

05/01/91

Parameter

Units

MDL

S6-3

ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	u5
Chloroethane	ug/L	0.5	ND	u5
Methylene chloride	ug/L	0.5	ND	u5
1,1-Dichloroethene	ug/L	0.5	ND	1
1,1-Dichloroethane	ug/L	0.5	ND	1
trans-1,2-Dichloroethene	ug/L	0.5	ND	u5
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	u5
1,2-Dichloroethane	ug/L	0.5	ND	1
1,1,1-Trichloroethane	ug/L	0.5	ND	1
Carbon tetrachloride	ug/L	0.5	ND	1
Bromodichloromethane	ug/L	0.5	ND	1
1,2-Dichloropropane	ug/L	0.5	ND	u5
cis-1,3-Dichloropropene	ug/L	0.5	ND	1
Trichloroethene	ug/L	0.5	ND	1
Dibromochloromethane	ug/L	0.5	ND	1
1,1,2-Trichloroethane	ug/L	0.5	ND	1
Benzene	ug/L	0.5	ND	1
trans-1,3-Dichloropropene	ug/L	0.5	ND	u5
Bromoform	ug/L	0.5	ND	1
Tetrachloroethene	ug/L	0.5	ND	1
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	1
Toluene	ug/L	0.5	ND	1
Chlorobenzene	ug/L	0.5	ND	1
Ethyl benzene	ug/L	0.5	ND	u5
Xylene, total	ug/L	0.5	ND	1

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810501508 00050

PACE Sample Number:

95 0030221

Date Collected:

04/30/91

Date Received:

05/01/91

ParameterUnitsMDLS6-3 DupORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	u5
Chloroethane	ug/L	0.5	ND	u5
Methylene chloride	ug/L	0.5	ND	u5
1,1-Dichloroethene	ug/L	0.5	ND	1
1,1-Dichloroethane	ug/L	0.5	ND	1
trans-1,2-Dichloroethene	ug/L	0.5	ND	u5
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	u5
1,2-Dichloroethane	ug/L	0.5	ND	1
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	1
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	u5
cis-1,3-Dichloropropene	ug/L	0.5	ND	1
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	1
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	1
trans-1,3-Dichloropropene	ug/L	0.5	ND	u5
Bromoform	ug/L	0.5	ND	1
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	1
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	1
Ethyl benzene	ug/L	0.5	ND	u5
Xylene, total	ug/L	0.5	ND	1

MDL Method Detection Limit  
ND Not detected at or above the MDL.



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
INORGANIC ANALYSES DATA

Samples Collected 4/30/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Metals analytical data presented for this sample delivery group were fair. Many of the detection limits were estimated. In addition, several positive sample results were rejected due to blank contamination. All unqualified sample data may be used without reservation.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).



TRILLIUM<sup>INC</sup>

UJ - The material was analyzed for, but was not detected.  
The associated value is an estimate and may be  
inaccurate or imprecise.

These codes are used on the accompanying data summary sheets  
to qualify some of the results.



Inorganic Data Validation  
for  
Environmental Project Control, Inc.  
Samples Collected 4/30/91

Case Narrative

This group contained three treatment system samples including one field blank to be analyzed for total metals.

Samples validated in this report are noted below:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-3FB	3026	4/30/91
S6-3	3027	4/30/91
S1-3	3028	4/30/91

The areas reviewed during validation are listed below.

## CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
- IX. ICP Serial Dilution Analysis
- X. Detection Limits
- XI. Sample Result Verification
- XII. Overall Assessment

## Data Validation

### I. Holding Times

All metals analyses were conducted within acceptable holding times.

### II. Calibration

Calibrations for metals were satisfactory.

One of the standards analyzed to establish the calibration curve for AA must be at the CRDL. The CRDL for antimony is 60 ppb, and the highest standard analyzed was 45 ppb. Since antimony was not detected above 20 ppb in any sample (including the matrix spike), data quality was not affected.

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within  $\pm 20\%$  of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for chromium and silver were estimated.

### III. Blanks

No preparation or calibration blanks were above the CRDLs or less than the negative CRDLs.

The preparation blank contained lead (0.9 ppb) greater than the IDL.

Continuing calibration blank for lead (0.9 ppb) and arsenic (1.3 ppb) were greater than the IDLs.

The field blank lead (0.70 ppb) and zinc (23.0 ppb).

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Zinc and lead results were qualified as less than the reported values (U).

Arsenic detection limits were raised to 1.3 U because of the continuing calibration blank result.

#### **IV. ICP Interference Check Sample**

Interference check sample results were satisfactory.

#### **V. Matrix Spike Sample Analysis**

Matrix spike analyses were satisfactory except for barium (51.8% recovery), lead (56.5% recovery), and selenium (71.0% recovery). Positive results and detection limits for the above analytes were qualified as estimated (J and UJ).

#### **VI. Duplicate Sample Analysis**

Duplicate analyses were satisfactory.

#### **VII. Laboratory Control Sample Analyses**

Laboratory control sample results were satisfactory.

#### **VIII. Furnace Atomic Absorption Analysis**

Duplicate injections were performed for all samples as required. Results for S6-3 and S1-3 (lead) did not agree within  $\pm 20\%$ . Results for these samples were estimated.

#### **IX. ICP Serial Dilution Analysis**

Serial dilutions were conducted on S1-3. All results met the validation criteria of 15%.

#### **X. Detection Limits**

Instrument detection limits (IDLs) should be less than the contract required detection limits (CRDLs). The IDL reported for mercury is equal to its CRDL. Mercury was not detected in any of the samples, so no data were qualified.

#### **XI. Sample Result Verification**

Sample results were acceptable as qualified.

### XIII. Overall Assessment

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within  $\pm 20\%$  of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for chromium and silver were estimated.

The preparation blank contained lead (0.9 ppb) greater than the IDL.

Continuing calibration blank for lead (0.9 ppb) and arsenic (1.3 ppb) were greater than the IDLs.

The field blank lead (0.70 ppb) and zinc (23.0 ppb).

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Zinc and lead results were rejected (U).

Arsenic detection limits were raised to 1.3 U because of the continuing calibration blank result.

Matrix spike analyses were satisfactory except for barium (51.8% recovery), lead (56.5% recovery), and selenium (71.0% recovery). Positive results and detection limits for the above analytes were qualified as estimated (J and UJ).

Duplicate injections were performed for all samples as required. Results for S6-3 and S1-3 (lead) did not agree within  $\pm 20\%$ . Results for these samples were estimated.

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET 013

EPA SAMPLE NO.

S1-3FB

Lab Name: PACE\_INCORPORATED Contract: \_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: S1-3\_

Matrix (soil/water): WATER

Lab Sample ID: 3026.4\_

Level (low/med): LOW\_

Date Received: 05/01/91

Solids: \_\_\_\_\_ 0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	13 1.0	U		F
7440-39-3	Barium	12.5	U		P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	448	U		P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	0.70	B		F
7439-95-4	Magnesium	509	U		P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	760	U		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	390	U		P
7440-28-0	Thallium	0.70	U		F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	23.0			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR\_ Texture: \_\_\_\_\_

Color After: COLORLESS Clarity After: CLEAR\_ Artifacts: \_\_\_\_\_

Comments:

1  
INORGANIC ANALYSES DATA SHEET 014

EPA SAMPLE NO.

S6-3

Lab Name: PACE\_INCORPORATED Contract: \_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: S1-3

Matrix (soil/water): WATER

Lab Sample ID: 3027.2

Level (low/med): LOW

Date Received: 05/01/91

\* Solids: \_\_\_\_\_ 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	239	—	—	P
7440-36-0	Antimony	0.90	B	—	F
7440-38-2	Arsenic	1.3 1.0	U	W	F
7440-39-3	Barium	22.0	B	N	P
7440-41-7	Beryllium	1.1	U	—	P
7440-43-9	Cadmium	3.0	U	—	P
7440-70-2	Calcium	80300	—	—	P
7440-47-3	Chromium	9.5	U	—	P
7440-48-4	Cobalt	6.4	U	—	P
7440-50-8	Copper	8.0	B	—	P
7439-89-6	Iron	97.7	U	—	P
7439-92-1	Lead	0.50	B	WN	F
7439-95-4	Magnesium	11200	—	—	P
7439-96-5	Manganese	10	B	—	P
7439-97-6	Mercury	0.20	U	—	CV
7440-02-0	Nickel	8.6	U	—	P
7440-09-7	Potassium	3310	B	—	P
7782-49-2	Selenium	0.50	U	WN	F
7440-22-4	Silver	8.1	U	—	P
7440-23-5	Sodium	128000	—	—	P
7440-28-0	Thallium	0.70	U	W	F
7440-62-2	Vanadium	4.2	U	—	P
7440-66-6	Zinc	57.0	—	—	P
—	Cyanide	—	—	—	NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR

Artifacts: \_\_\_\_\_

Comments:

1  
INORGANIC ANALYSES DATA SHEET 00015

EPA SAMPLE NO.

S1-3

Lab Name: PACE\_INCORPORATED Contract: \_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: S1-3

Matrix (soil/water): WATER

Lab Sample ID: 3028.0

Level (low/med): LOW

Date Received: 05/01/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.3 1.0	U		F
7440-39-3	Barium	23.0	B	N	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	86200			P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	11.0	B		P
7439-89-6	Iron	204			P
7439-92-1	Lead	1.5	B	WN	F
7439-95-4	Magnesium	12200			P
7439-96-5	Manganese	28.0			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	3580	B		P
7782-49-2	Selenium	0.50	U	N	F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	139000			P
7440-28-0	Thallium	0.70	U	W	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	272			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: \_\_\_\_\_

Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:





**DATA VALIDATION REPORT**  
**FOR**  
**ENVIRONMENTAL PROJECT CONTROL, INC.**

**WELLS G&H PROJECT**  
**TREATMENT SYSTEM SAMPLING**  
**INORGANIC ANALYSES DATA**

**Samples Collected 4/30/91-5/16/91**

**Chemical Analyses Performed By**  
**PACE, Incorporated**

**August 16, 1991**

**By:**

**Trillium, Inc.**  
**7A Grace's Drive**  
**Coatesville, PA 19320**  
**(215) 383-7233**

## EXECUTIVE SUMMARY

All wet chemistry data is acceptable as modified.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

**Inorganic Data Validation**  
**for**  
**Environmental Project Control, Inc.**  
**Samples Collected 4/30/91-5/16/91**

**Case Narrative**

This group contained 62 water samples analyzed for total suspended solids. Samples S1-16, S1-16FB, and S6-16 were also analyzed for total alkalinity, chloride, silica, fluoride, nitrite/nitrate, total phosphorus, total dissolved solids, sulfate, and hexavalent chromium.

Samples validated in this report are noted below:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-3	30280	04/30/91
S1-3FB	30299	04/30/91
S1-3DUP	30302	04/30/91
S1A-3	30310	04/30/91
S1-4	30442	05/01/91
S1-4FB	30477	05/01/91
S1-4DUP	30450	05/01/91
S1A-2	30469	05/01/91
S1-6	31627	05/01/91
S1-6FB	31635	05/01/91
S1-6DUP	31643	05/01/91
S1A-4	31660	05/03/91
S1A-5	31724	05/04/91
S1-7FB	31716	05/04/91
S1-7DUP	31694	05/04/91
S1-7	31686	05/04/91
S1-8	31791	05/05/91
S1-8FB	31805	05/05/91
S1-8DUP	31813	05/05/91
S1A-6	31830	05/05/91
S1-9	32054	05/06/91
S1-9DUP	32062	05/06/91
S1-9FB	32070	05/06/91
S1A-7	32119	05/06/91
S1-10	32321	05/07/91
S1-10DUP	32330	05/07/91
S1-10FB	32348	05/07/91
S1A-8	32364	05/07/91
S1A-9	32747	05/08/91
S1-11	32801	05/08/91
S1-11	32810	05/08/91

S1-11FB	32828	05/08/91
S1-12	33344	05/08/91
S1-12FB	33360	05/09/91
S1-12DUP	33352	05/09/91
S1A-10	33387	05/09/91
S1-13	33590	05/10/91
S1-13DUP	33603	05/10/91
S1-13FB	33611	05/10/91
S1A-11	33638	05/10/91
S1-14	33719	05/11/91
S1-14DUP	33727	05/11/91
S1-14FB	33735	05/11/91
S1A-12	33751	05/11/91
S1-15	34545	05/12/91
S1-15FB	34561	05/12/91
S1-15DUP	34553	05/12/91
S1A-13	34570	05/12/91
S1-16	34707	05/13/91
S1-16FB	34715	05/13/91
S6-16	34790	05/13/91
S1A-15	35002	05/14/91
S1-17FB	34995	05/14/91
S1-17	34979	05/14/91
S1-18	35959	05/15/91
S1-18DUP	35967	05/15/91
S1-18	35983	05/15/91
S1A-16	35991	05/15/91
S1A-17	36114	05/16/91
S1-19DUP	36084	05/16/91
S1-19FB	36092	05/16/91
S1-19	36076	05/16/91

The areas reviewed during validation are listed below.

## **Wet Chemistry Data Validation**

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. Matrix Spike Sample Analysis
- V. Duplicate Sample Analysis
- VI. Sample Result Verification
- VII. Other QC
- VIII. Overall Assessment

## Data Validation

### I. Holding Times

All wet chemistry analyses were conducted within acceptable holding times. Since the computer generated print-out for hexavalent chromium listed the analysis date as 5/11/91 and the sample collection date as 5/13/91, data were rejected.

### II. Calibration

The correlation coefficient for the calibration curve for sulfate was 0.9814. All positive sulfate results and detection limits were qualified as estimated.

### III. Blanks

Field blank results are summarized below.

<u>Sample (FB)</u>	<u>Parameter</u>	<u>Result (ppm)</u>
S1-16	Alkalinity	2
	Nitrate/Nitrite	0.07
	Silica	5.4
	TDS	4.0

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value.

### IV. Matrix Spike Sample Analysis

Matrix spike analyses were acceptable.

### V. Duplicate Sample Analysis

Duplicate results were acceptable with the exception of S1-4 (TDS) which had an RPD of 200%. No data were qualified since the results were 1 ppm and ND with an MDL of 1 ppm.

### VI. Sample Result Verification

Form I's were correct.

**VII. Overall Assessment**

All data were acceptable with the changes noted above.

Unifirst

PACE Project Number: 810501508

PACE Sample Number: 95 0030280  
 Date Collected: 04/30/91  
 Date Received: 05/01/91  
Parameter Units MDL S1-3

INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L 1 3

PACE Sample Number: 95 0030299  
 Date Collected: 04/30/91  
 Date Received: 05/01/91  
Parameter Units MDL S1-3 Dup

INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L 1 ~~3~~ 3 ~~05~~248  
10/8/91

PACE Sample Number: 95 0030302  
 Date Collected: 04/30/91  
 Date Received: 05/01/91  
Parameter Units MDL S1-3 FB

INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L 1 ND

PACE Sample Number: 95 0030310  
 Date Collected: 04/30/91  
 Date Received: 05/01/91  
Parameter Units MDL S1A-3

INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L 1 3

MDL Method Detection Limit  
 ND Not Detected at or above the MDL



Unifirst

PACE Project Number: 810502500

PACE Sample Number: 95 0030442  
Date Collected: 05/01/91  
Date Received: 05/02/91  
Parameter Units MDL S1-4  
INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L i i

PACE Sample Number: 95 0030450  
Date Collected: 05/01/91  
Date Received: 05/02/91  
Parameter Units MDL S1-4 DUP  
INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L 1 ND

PACE Sample Number: 95 0030469  
Date Collected: 05/01/91  
Date Received: 05/02/91  
Parameter Units MDL S1A-2  
INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L 1 ND

PACE Sample Number: 95 0030477  
Date Collected: 05/01/91  
Date Received: 05/02/91  
Parameter Units MDL S1-4FB  
INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L 1 ND

MDL Method Detection Limit  
ND Not detected at or above the MDL.

00121

Unifirst

PACE Project Number: 810504500

PACE Sample Number:

95 0031627

Date Collected:

05/03/91

Date Received:

05/04/91

ParameterUnitsMDLS1-6INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

1

PACE Sample Number:

95 0031635

Date Collected:

05/03/91

Date Received:

05/04/91

ParameterUnitsMDLS1-6 FBINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

00122

Unifirst

PACE Project Number: 810504500

PACE Sample Number:

95 0031643

Date Collected:

05/03/91

Date Received:

05/04/91

Parameter

Units

MDL

S1-6 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

1

MDL

Method Detection Limit

00123

PACE Project Number: 810504500

Unifirst

PACE Sample Number:

Date Collected:

Date Received:

Parameter

95 0031660

05/03/91

05/04/91

S1A-4

Units

MDL

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L

1

1

MDL

Method Detection Limit

00124

Unifirst

PACE Project Number: 810504501

PACE Sample Number:

95 0031724

Date Collected:

05/04/91

Date Received:

05/04/91

Parameter

Units

MDL

S1A-5

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

00125

Unifirst

PACE Project Number: 810504501

PACE Sample Number:

95 0031716

Date Collected:

05/04/91

Date Received:

05/04/91

Parameter

Units

MDL

S1-7 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00126

Unifirst

PACE Project Number: 810504501

PACE Sample Number:

95 0031694

Date Collected:

05/04/91

Date Received:

05/04/91

Parameter

Units

MDL

S1-7 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00127

Unifirst

PACE Project Number: 810504501

PACE Sample Number:

95 0031686

Date Collected:

05/04/91

Date Received:

05/04/91

ParameterUnitsMDLS1-7INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



00128

Unifirst

PACE Project Number: 810505500

PACE Sample Number: 95 0031791  
Date Collected: 05/05/91  
Date Received: 05/05/91  
Parameter                      Units                      MDL                      S1-8

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L                      1                      ND

PACE Sample Number: 95 0031805  
Date Collected: 05/05/91  
Date Received: 05/05/91  
Parameter                      Units                      MDL                      S1-8 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L                      1                      ND

MDL                      Method Detection Limit  
ND                      Not detected at or above the MDL.

00129

Unifirst

PACE Project Number: 810505500

PACE Sample Number:

95 0031813

Date Collected:

05/05/91

Date Received:

05/05/91

Parameter

Units

MDL

S1-8 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

00130

Unifirst

PACE Project Number: 810505500

PACE Sample Number:

95 0031830

Date Collected:

05/05/91

Date Received:

05/05/91

Parameter

Units

MDL

S1A-6

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00131

Unifirst

PACE Project Number: 810507501

PACE Sample Number:	95 0032054
Date Collected:	05/06/91
Date Received:	05/07/91
<u>Parameter</u>	<u>Units</u> <u>MDL</u> <u>SI-9</u>

INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL	Method Detection Limit
ND	Not detected at or above the MDL.

00132

Unifirst

PACE Project Number: 810507501

PACE Sample Number:

95 0032062

Date Collected:

05/06/91

Date Received:

05/07/91

Parameter

Units

MDL

S1-9 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

00133

Unifirst

PACE Project Number: 810507501

PACE Sample Number:

95 0032070

Date Collected:

05/06/91

Date Received:

05/07/91

Parameter

Units

MDL

SI-9 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00134

Unifirst

PACE Project Number: 810507501

PACE Sample Number:

95 0032119

Date Collected:

05/06/91

Date Received:

05/07/91

Parameter

Units

MDL

S1A-7

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

00135

Unifirst

PACE Project Number: 810508501

PACE Sample Number:

95 0032321

Date Collected:

05/07/91

Date Received:

05/08/91

Parameter

Units

MDL

S1-10

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



00136

Unifirst

PACE Project Number: 810508501

PACE Sample Number:

95 0032330

Date Collected:

05/07/91

Date Received:

05/08/91

Parameter

Units

MDL S1-10 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL Method Detection Limit  
ND Not detected at or above the MDL.

00137

Unifirst

PACE Project Number: 810508501

PACE Sample Number:

95 0032348

Date Collected:

05/07/91

Date Received:

05/08/91

Parameter

Units

MDL

S1-10 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00138

Unifirst

PACE Project Number: 810508501

PACE Sample Number:

95 0032364

Date Collected:

05/07/91

Date Received:

05/08/91

Parameter

Units

MDL

S1A-8

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00139

Unifirst

PACE Project Number: 810509500

PACE Sample Number:

95 0032747

Date Collected:

05/08/91

Date Received:

05/09/91

Parameter

Units

MDL

SIA-9

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00140

Unifirst

PACE Project Number: 810509500

PACE Sample Number:

95 0032801

Date Collected:

05/08/91

Date Received:

05/09/91

Parameter

Units

MDL

S1-11

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00141

Unifirst

PACE Project Number: 810509500

PACE Sample Number:

95 0032810

Date Collected:

05/08/91

Date Received:

05/09/91

Parameter

Units

MDL

S1-11 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00142

Unifirst

PACE Project Number: 810509500

PACE Sample Number:

95 0032828

Date Collected:

05/08/91

Date Received:

05/09/91

Parameter

Units

MDL

S1-11 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

Unifirst

PACE Project Number: 810510501

PACE Sample Number: 95 0033344  
Date Collected: 05/09/91  
Date Received: 05/10/91  
Parameter                      Units                      MDL                      S1-12

INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended                      mg/L                      1                      ND

PACE Sample Number: 95 0033360  
Date Collected: 05/09/91  
Date Received: 05/10/91  
Parameter                      Units                      MDL                      S1-12 FB

INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended                      mg/L                      1                      ND

MDL                      Method Detection Limit  
ND                      Not detected at or above the MDL.



00144

Unifirst

PACE Project Number: 810510501

PACE Sample Number:

95 0033352

Date Collected:

05/09/91

Date Received:

05/10/91

Parameter

Units

MDL

S1-12 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00145

Unifirst

PACE Project Number: 810510501

PACE Sample Number:

95 0033387

Date Collected:

05/09/91

Date Received:

05/10/91

Parameter

Units

MDL

S1A-10

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

\* MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00146

UNIFIRST/ENSR

PACE Project Number: 810511500

PACE Sample Number:

95 0033590

Date Collected:

05/10/91

Date Received:

05/11/91

Parameter

Units

MDL

S1-13

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Sample Number:  
Date Collected:  
Date Received:  
Parameter

PACE Project Number: 810511500

00147

95 0033603  
05/10/91  
05/11/91  
SI-13 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

Units

MDL

mg/L

1

ND

PACE Sample Number:  
Date Collected:  
Date Received:  
Parameter

95 0033611  
05/10/91  
05/11/91  
SI-13 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

Units

MDL

mg/L

1

ND

MDL  
ND

Method Detection Limit  
Not detected at or above the MDL.

00148

UNIFIRST/ENSR

PACE Project Number: 810511500

PACE Sample Number:

95 0033638

Date Collected:

05/10/91

Date Received:

05/11/91

Parameter

Units

MDL

S1A-11

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00149

UNIFIRST/ENSR

PACE Project Number: 810511501

PACE Sample Number:

95 0033719

Date Collected:

05/11/91

Date Received:

05/11/91

Parameter

Units

MDL

S1-14

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00150

UNIFIRST/ENSR

PACE Project Number: 810511501

PACE Sample Number:

95 0033727

Date Collected:

05/11/91

Date Received:

05/11/91

ParameterUnitsMDLS1-14 DupINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

PACE Sample Number:

95 0033735

Date Collected:

05/11/91

Date Received:

05/11/91

ParameterUnitsMDLS1-14 FBINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00151

UNIFIRST/ENSR

PACE Project Number: 810511501

PACE Sample Number:

95 0033751

Date Collected:

05/11/91

Date Received:

05/11/91

Parameter

Units

MDL

S1A-12

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



00152

UNIFIRST/ENSR

PACE Project Number: 810512501

PACE Sample Number:	95 0034545
Date Collected:	05/12/91
Date Received:	05/12/91
<u>Parameter</u>	<u>Units</u> <u>MDL</u> <u>S1-15</u>

INORGANIC ANALYSISINDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L      1      ND

PACE Sample Number:	95 0034561
Date Collected:	05/12/91
Date Received:	05/12/91
<u>Parameter</u>	<u>Units</u> <u>MDL</u> <u>S1-15 FB</u>

INORGANIC ANALYSISINDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L      1      ND

MDL      Method Detection Limit  
ND      Not detected at or above the MDL.

00153

UNIFIRST/ENSR

PACE Project Number: 810512501

PACE Sample Number:

95 0034553

Date Collected:

05/12/91

Date Received:

05/12/91

Parameter

Units

MDL

S1-15 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00154

UNIFIRST/ENSR

PACE Project Number: 810512501

PACE Sample Number:

95 0034570

Date Collected:

05/12/91

Date Received:

05/12/91

Parameter

Units

MDL

S1A-13

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL Method Detection Limit  
ND Not detected at or above the MDL.

UNIFIRST

PACE Project Number: 810514500

PACE Sample Number:

95 0034707

Date Collected:

05/13/91

Date Received:

05/14/91

ParameterUnitsMDLS1-16INORGANIC ANALYSISINDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L

1

74

Chloride

mg/L

1

261

Chromium, Hexavalent

mg/L

~~0.01~~~~ND~~

R

Fluoride, Total

mg/L

0.1

ND

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

3.1

Phosphorus, Total

mg/L

0.3

ND

Silica, dissolved

mg/L

0.2

11.7

U

Solids, Total Dissolved

mg/L

1

626

Solids, Total Suspended

mg/L

1

ND

Sulfate

mg/L

5

30.3

J

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

pin  
5/18/91

00156

UNIFIRST

PACE Project Number: 810514500

PACE Sample Number:

95 0034715

Date Collected:

05/13/91

Date Received:

05/14/91

ParameterUnitsMDLSI-16 FBINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Alkalinity, Total	mg/L	1	2
Chloride	mg/L	1	ND
Chromium, Hexavalent	mg/L	<del>0.01</del>	<del>ND</del>
Fluoride, Total	mg/L	0.1	ND
Mercury	ug/L	0.2	ND
Nitrogen, Nitrate plus Nitrite	mg/L	0.02	0.07
Phosphorus, Total	mg/L	0.3	ND
Silica, dissolved	mg/L	0.2	5.4
Solids, Total Dissolved	mg/L	1	4
Solids, Total Suspended	mg/L	1	ND
Sulfate	mg/L	5	ND

R per 5/18/91

ND 45

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00157

PACE Project Number: 810514500

95 0034790  
05/13/91  
05/14/91  
S6-16

UNIFIRST

PACE Sample Number:  
Date Collected:  
Date Received:  
ParameterUnitsMDLINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Alkalinity, Total

Chloride

Chromium, Hexavalent

Fluoride, Total

Nitrogen, Nitrate plus Nitrite

Phosphorus, Total

Silica, dissolved

Solids, Total Dissolved

Solids, Total Suspended

Sulfate

mg/L

mg/L

mg/L

mg/L

mg/L

mg/L

mg/L

mg/L

mg/L

mg/L

1

10

~~0.01~~

0.1

0.2

0.3

0.2

1

1

5

72

259

ND

ND

3.1

ND

11.3 u

678

ND

32.8 J

R per 7/18/91

MDL  
NDMethod Detection Limit  
Not detected at or above the MDL.

00159

UNIFIRST ENSR

PACR Project Number: 810515504

PACE Sample Number:

95 0035002

Date Collected:

05/14/91

Date Received:

05/15/91

Parameter

Units

MDL

S1A-15

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

001

UNIFIRST ENSR

PACR Project Number: 810515504

00160

ggc 7/1/91

PACE Sample Number:

95 0034995

Date Collected:

05/14/91

Date Received:

05/15/91

Parameter

Units

MDL

S1-17 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



UNIFIRST ENSR

PACE Project Number: 810515504

00161

PACE Sample Number:

95 0034979

Date Collected:

05/14/91

Date Received:

05/15/91

Parameter

Units

MDL

SI-17

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00162

UNIFIRST/ENSR

PACE Project Number: 810516513

PACE Sample Number:

95 0035959

Date Collected:

05/15/91

Date Received:

05/16/91

Parameter

Units

MDL

SI-18

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00163

UNIFIRST/ENSR

PACE Project Number: 810516513

PACE Sample Number: 95 0035967  
Date Collected: 05/15/91  
Date Received: 05/16/91  
Parameter Units MDL S1-18 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L 1 ND

PACE Sample Number: 95 0035983  
Date Collected: 05/15/91  
Date Received: 05/16/91  
Parameter Units MDL S1-18 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L 1 ND

MDL Method Detection Limit  
ND Not detected at or above the MDL.

00164

UNIFIRST/ENSR

PACE Project Number: 810516513

PACE Sample Number:

95 0035991

Date Collected:

05/15/91

Date Received:

05/16/91

Parameter

Units

MDL

SIA-16

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00165

UNIFIRST/ENSR

PACE Project Number: 810517500

PACE Sample Number:

95 0036114

Date Collected:

05/16/91

Date Received:

05/17/91

Parameter

Units

MDL

SIA-17

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00166

UNIFIRST/ENSR

PACE Project Number: 810517500

PACE Sample Number:

95 0036084

Date Collected:

05/16/91

Date Received:

05/17/91

ParameterUnitsMDLSI-19 DupINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

PACE Sample Number:

95 0036092

Date Collected:

05/16/91

Date Received:

05/17/91

ParameterUnitsMDLSI-19 FBINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 4/30/91-5/19/91

Chemical Analyses Performed By  
PACE, Incorporated

August 16, 1991  
Revised 10/8/91

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Tetrachloroethene, trichloroethene, and total 1,2-dichloroethene were the only target compound list (TCL) compounds detected above the detection limit. No tentatively identified compounds (TICs) were detected.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



### Case Narrative

Thirty treatment system samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. for analysis by EPA Method 524.2. Due to high concentrations of tetrachloroethene, the laboratory was requested to analyze the samples by EPA CLP methodology.

The samples included are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S2-9	3284	05/08/91
S2-10	3339	05/09/91
S2-11	3364	05/10/91
S2-12	3376	05/11/91
S2-13	3458	05/12/91
S2-14	3474	05/13/91
S2-15	3501	05/14/91
S2-16	3600	05/15/91
S2-17	3612	05/16/91
S2-18	3658	05/17/91
S2-19	3670	05/18/91
S2-20	3730	05/19/91
S3-9	3285	05/08/91
S3-10	3340	05/09/91
S3-11	3353	05/10/91
S3-12	3365	05/11/91
S3-13	3459	05/12/91
S3-14	3475	05/13/91
S3-15	3502	05/14/91
S3-16	3601	05/15/91
S3-17	3613	05/16/91
S3-18	3659	05/17/91
S3-19	3671	05/18/91
S3-20	3731	05/19/91
S4-1	3019	04/30/91
S4-2	3039	05/01/91
S4-3	3130	05/02/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

Since all samples were analyzed outside the 7 day holding time for non-preserved samples but within the 14 day holding time, detection limits for aromatic compounds were estimated.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data were affected.

### **A. Initial**

Initial calibration criteria were met on instruments J and G with the exception of the RRF for 2-butanone on instrument G. All RRFs for 2-butanone were less than the criteria of 0.1 (0.031, 0.030, 0.077). 2-Butanone detection limits for samples analyzed on instrument G were rejected.

### **B. Continuing**

Several compounds did not meet acceptable continuing calibration criteria on instrument J. Those affecting data were the RRF's for carbon tetrachloride (0.088) analyzed on 5/11 and 2-butanone (0.096) analyzed on 5/13. Since these compounds did not meet the RRF acceptance criteria of 0.1, detection limits for samples analyzed on these dates were rejected.

Several compounds did not meet acceptable continuing calibration criteria on instrument G. Those affecting data were the RRF's for 2-butanone which were unacceptable in each continuing calibration standard analysis. Detection limits for 2-butanone were rejected for all samples analyses on instrument G.

#### IV. Blanks

Toluene was detected in Method Blank VBLK02 at 0.8 ppb. The result for toluene in Sample S4-2 was qualified as less than the reported value.

No other data were affected by compounds detected in the method blanks.

#### V. Surrogate Recovery

All surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

No matrix spike or duplicate matrix spike were performed on these samples. The data should be used with caution.

#### VII. Field Duplicates

Field duplicate samples collected for analysis with these samples were analyzed by Method 524.2.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

Target compounds were properly identified.

#### X. Compound Quantitation and Reported Detection Limits

Detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were detected.

#### XII. System Performance

System performance was acceptable.

### **XIII. Overall Assessment of Data for a Case**

All detection limits were acceptable except as noted in Sections I and III. Although surrogates and internal standard recoveries were acceptable, the data should be used with caution since no matrix spikes or duplicate matrix spikes were analyzed.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

1A SAMPLE NO.

S2-9  
00079

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3284.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3020

Level: (low/med) LOW

Date Received: 5/9/91 2Kb  
5/8/91 10/3/91

Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U R
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	5.	U
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U 5
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	75.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U 5
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene(total)	5.	U

7/18/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S2-9

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00080

Matrix: (soil/water) WATER

Lab Sample ID: 3284.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3020

Level: (low/med) LOW

Date Received: 5/9/91 ~~5/8/91~~ EKA 10/3/91

Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

1A SAMPLE NO.

S2-10

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00085

Matrix: (soil/water) WATER

Lab Sample ID: 3339.5

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3022

Level: (low/med) LOW

Date Received: 5/9/91 5/10/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	5.	U
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	120.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene(total)	5.	U

per  
7/18/91



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S2-1C

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3339.5

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3022

Level: (low/med) LOW

Date Received: 5/10/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO.

S2-11

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00092

Matrix: (soil/water) WATER

Lab Sample ID: 3364.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3061

Level: (low/med) LOW

Date Received: 5/11/91 *ELS*  
5/10/91 10/3/91

Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U R
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	5.	U
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U J
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	170.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U J
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene(total)	5.	U

FORM I VOA

1/87 Rev.

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S2-11

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3364.6 00093

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3061

Level: (low/med) LOW

Date Received: 5/11/91 225 10/3/91

Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO.

S2-12

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00101

Matrix: (soil/water) WATER

Lab Sample ID: 3376.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3053

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U R
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	5.	U
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U J
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	130.	
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U J
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene (total)	5.	U

*pm*  
7/18/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S2-12

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00102

Matrix: (soil/water) WATER

Lab Sample ID: 3376.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3053

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

TA SAMPLE NO.

56-13TB

52-13

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

001587 No.:

7/8/91

Matrix: (soil/water) WATER

Lab Sample ID: 3458.8

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3062

Level: (low/med) LOW

Date Received: 5/12/91

Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U R
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	5.	U
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U S
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	150.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U S
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene (total)	5.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TEMPORARILY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: PACE

Contract:

~~56-13TB~~  
32-13

Lab Code: PACE

Case No.: EPC

SAS No.:

00108

SDG No.:

MS 7/8/91

Matrix: (soil/water) WATER

Lab Sample ID: 3458.8

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3062

Level: (low/med) LOW

Date Received: 5/12/91

Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

S2-14

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.: 00116

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3474.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3085

Level: (low/med) LOW

Date Received: 5/17/91 *EX-1 10/13/91*

Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	5.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U R
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U J
10061-02-6	Trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	190.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	U J
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

*7/18/91*



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S2-14

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3474.00117

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3085

Level: (low/med) LOW

Date Received: 5/14/91 2.0  
5/13/91 10/3/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO.

S2-15

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00125

Matrix: (soil/water) WATER

Lab Sample ID: 3501.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2708

Level: (low/med) LOW

Date Received: 5/15/91 8KJ 10/3/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	3.	J
540-59-0-----	1,2-Dichloroethene (total)	8.	
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	6.	
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	10.	
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	110.	
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene (total)	5.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S2-15

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00126

Matrix: (soil/water) WATER

Lab Sample ID: 3501.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2708

Level: (low/med) LOW

Date Received: 5/15/91 5/14/91 10/3/91

Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO.

S2-16

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00135

Matrix: (soil/water) WATER

Lab Sample ID: 3600.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2710

Level: (low/med) LOW

Date Received: 5/14/91 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	4.	J
540-59-0-----	1,2-Dichloroethene (total)	9.	
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	J
71-55-6-----	1,1,1-Trichloroethane	7.	
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	5.	J
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U <sup>5</sup>
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	130.	
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U <sup>5</sup>
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene (total)	5.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TEMPORARILY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S2-16

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3600.9

00136

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2710

Level: (low/med) LOW

Date Received: 5/16/91 *ECS*  
5/14/91 10/3/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO.

S2-17

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00145

Matrix: (soil/water) WATER

Lab Sample ID: 3612.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2743

Level: (low/med) LOW

Date Received: 5/17/91 2nd 10/3/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	25.	U
74-83-9-----	Bromomethane	25.	U
75-01-4-----	Vinyl Chloride	25.	U
75-00-3-----	Chloroethane	25.	U
75-09-2-----	Methylene Chloride	12.	U
67-64-1-----	Acetone	25.	U
75-15-0-----	Carbon Disulfide	12.	U
75-35-4-----	1,1-Dichloroethene	12.	U
75-34-3-----	1,1-Dichloroethane	12.	U
540-59-0-----	1,2-Dichloroethene (total)	9.	J
67-66-3-----	Chloroform	12.	U
107-06-2-----	1,2-Dichloroethane	12.	U
78-93-3-----	2-Butanone	25.	U
71-55-6-----	1,1,1-Trichloroethane	7.	J
56-23-5-----	Carbon Tetrachloride	12.	U
108-05-4-----	Vinyl Acetate	25.	U
75-27-4-----	Bromodichloromethane	12.	U
78-87-5-----	1,2-Dichloropropane	12.	U
10061-01-5-----	cis-1,3-Dichloropropene	12.	U
79-01-6-----	Trichloroethene	13.	
124-48-1-----	Dibromochloromethane	12.	U
79-00-5-----	1,1,2-Trichloroethane	12.	U
71-43-2-----	Benzene	12.	U <sup>5</sup>
10061-02-6-----	Trans-1,3-Dichloropropene	12.	U
75-25-2-----	Bromoform	12.	U
108-10-1-----	4-Methyl-2-Pentanone	25.	U
591-78-6-----	2-Hexanone	25.	U
127-18-4-----	Tetrachloroethene	2,3.	
79-34-5-----	1,1,2,2-Tetrachloroethane	12.	U
108-88-3-----	Toluene	12.	U <sup>5</sup>
108-90-7-----	Chlorobenzene	12.	U
100-41-4-----	Ethylbenzene	12.	U
100-42-5-----	Styrene	12.	U
1330-20-7-----	Xylene (total)	12.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S2-17

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3612.2 00146

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2743

Level: (low/med) LOW

Date Received: 5/17/91 *ELJ 5/16/91*

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

S2-18

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3658.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2785

Level: (low/med) LOW

Date Received: 5/18/91 10/3/91

% Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

74-87-3-----	Chloromethane	50.	U
74-83-9-----	Bromomethane	50.	U
75-01-4-----	Vinyl Chloride	50.	U
75-00-3-----	Chloroethane	50.	U
75-09-2-----	Methylene Chloride	25.	U
67-64-1-----	Acetone	50.	U
75-15-0-----	Carbon Disulfide	25.	U
75-35-4-----	1,1-Dichloroethene	25.	U
75-34-3-----	1,1-Dichloroethane	25.	U
540-59-0-----	1,2-Dichloroethene (total)	25.	U
67-66-3-----	Chloroform	25.	U
107-06-2-----	1,2-Dichloroethane	25.	U
78-93-3-----	2-Butanone	50.	U
71-55-6-----	1,1,1-Trichloroethane	25.	U
56-23-5-----	Carbon Tetrachloride	25.	U
108-05-4-----	Vinyl Acetate	50.	U
75-27-4-----	Bromodichloromethane	25.	U
78-87-5-----	1,2-Dichloropropane	25.	U
10061-01-5-----	cis-1,3-Dichloropropene	25.	U
79-01-6-----	Trichloroethene	25.	U
124-48-1-----	Dibromochloromethane	25.	U
79-00-5-----	1,1,2-Trichloroethane	25.	U
71-43-2-----	Benzene	25.	U
10061-02-6-----	Trans-1,3-Dichloropropene	25.	U
75-25-2-----	Bromoform	25.	U
108-10-1-----	4-Methyl-2-Pentanone	50.	U
591-78-6-----	2-Hexanone	50.	U
127-18-4-----	Tetrachloroethene	350.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	25.	U
108-88-3-----	Toluene	25.	U
108-90-7-----	Chlorobenzene	25.	U
100-41-4-----	Ethylbenzene	25.	U
100-42-5-----	Styrene	25.	U
1330-20-7-----	Xylene (total)	25.	U



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TEMPORARILY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S2-13

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3658.0 00155

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2785

Level: (low/med) LOW

Date Received: 5/18/91 KCA 10/3/91

% Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO.

S2-19

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3670.00160

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3219

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	50.	U
74-83-9-----	Bromomethane	50.	U
75-01-4-----	Vinyl Chloride	50.	U
75-00-3-----	Chloroethane	50.	U
75-09-2-----	Methylene Chloride	25.	U
67-64-1-----	Acetone	50.	U
75-15-0-----	Carbon Disulfide	25.	U
75-35-4-----	1,1-Dichloroethene	25.	U
75-34-3-----	1,1-Dichloroethane	25.	U
540-59-0-----	1,2-Dichloroethene (total)	25.	U
67-66-3-----	Chloroform	25.	U
107-06-2-----	1,2-Dichloroethane	25.	U
78-93-3-----	2-Butanone	50.	U R
71-55-6-----	1,1,1-Trichloroethane	25.	U
56-23-5-----	Carbon Tetrachloride	25.	U
108-05-4-----	Vinyl Acetate	50.	U
75-27-4-----	Bromodichloromethane	25.	U
78-87-5-----	1,2-Dichloropropane	25.	U
10061-01-5-----	cis-1,3-Dichloropropene	25.	U
79-01-6-----	Trichloroethene	25.	U
124-48-1-----	Dibromochloromethane	25.	U
79-00-5-----	1,1,2-Trichloroethane	25.	U
71-43-2-----	Benzene	25.	U S
10061-02-6-----	Trans-1,3-Dichloropropene	25.	U
75-25-2-----	Bromoform	25.	U
108-10-1-----	4-Methyl-2-Pentanone	50.	U
591-78-6-----	2-Hexanone	50.	U
127-18-4-----	Tetrachloroethene	370.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	25.	U
108-88-3-----	Toluene	25.	U S
108-90-7-----	Chlorobenzene	25.	U
100-41-4-----	Ethylbenzene	25.	U
100-42-5-----	Styrene	25.	U
1330-20-7-----	Xylene (total)	25.	U

7/18/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S2-19-

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3670.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3219

Level: (low/med) LOW

Date Received: 5/18/91

Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

SA SAMPLE NO.

S2-20

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3730.700167

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3240

Level: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	25.	U
74-83-9-----	Bromomethane	25.	U
75-01-4-----	Vinyl Chloride	25.	U
75-00-3-----	Chloroethane	25.	U
75-09-2-----	Methylene Chloride	12.	U
67-64-1-----	Acetone	25.	U
75-15-0-----	Carbon Disulfide	12.	U
75-35-4-----	1,1-Dichloroethene	12.	U
75-34-3-----	1,1-Dichloroethane	12.	U
540-59-0-----	1,2-Dichloroethene (total)	12.	U
67-66-3-----	Chloroform	12.	U
107-06-2-----	1,2-Dichloroethane	12.	U
78-93-3-----	2-Butanone	25.	U R
71-55-6-----	1,1,1-Trichloroethane	12.	U
56-23-5-----	Carbon Tetrachloride	12.	U
108-05-4-----	Vinyl Acetate	25.	U
75-27-4-----	Bromodichloromethane	12.	U
78-87-5-----	1,2-Dichloropropane	12.	U
10061-01-5-----	cis-1,3-Dichloropropene	12.	U
79-01-6-----	Trichloroethene	12.	U
124-48-1-----	Dibromochloromethane	12.	U
79-00-5-----	1,1,2-Trichloroethane	12.	U
71-43-2-----	Benzene	12.	U J
10061-02-6-----	Trans-1,3-Dichloropropene	12.	U
75-25-2-----	Bromoform	12.	U
108-10-1-----	4-Methyl-2-Pentanone	25.	U
591-78-6-----	2-Hexanone	25.	U
127-18-4-----	Tetrachloroethene	180.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	12.	U
108-88-3-----	Toluene	12.	U J
108-90-7-----	Chlorobenzene	12.	U
100-41-4-----	Ethylbenzene	12.	U
100-42-5-----	Styrene	12.	U
1330-20-7-----	Xylene(total)	12.	U I

pm  
7/18/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S2-2C-

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00168

Matrix: (soil/water) WATER

Lab Sample ID: 3730.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3240

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

S3-9

00176

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3285.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3009

Level: (low/med) LOW

Date Received: 5/7/91 <sup>628</sup> 10/31/91

Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	50.	U
74-83-9-----	Bromomethane	50.	U
75-01-4-----	Vinyl Chloride	50.	U
75-00-3-----	Chloroethane	50.	U
75-09-2-----	Methylene Chloride	5.	J
67-64-1-----	Acetone	50.	U
75-15-0-----	Carbon Disulfide	25.	U
75-35-4-----	1,1-Dichloroethene	25.	U
75-34-3-----	1,1-Dichloroethane	25.	U
540-59-0-----	1,2-Dichloroethene (total)	25.	U
67-66-3-----	Chloroform	25.	U
107-06-2-----	1,2-Dichloroethane	25.	U
78-93-3-----	2-Butanone	50.	R
71-55-6-----	1,1,1-Trichloroethane	22.	J
56-23-5-----	Carbon Tetrachloride	25.	U
108-05-4-----	Vinyl Acetate	50.	U
75-27-4-----	Bromodichloromethane	25.	U
78-87-5-----	1,2-Dichloropropane	25.	U
10061-01-5-----	cis-1,3-Dichloropropene	25.	U
79-01-6-----	Trichloroethene	18.	J
124-48-1-----	Dibromochloromethane	25.	U
79-00-5-----	1,1,2-Trichloroethane	25.	U
71-43-2-----	Benzene	25.	U
10061-02-6-----	Trans-1,3-Dichloropropene	25.	U
75-25-2-----	Bromoform	25.	U
108-10-1-----	4-Methyl-2-Pentanone	50.	U
591-78-6-----	2-Hexanone	50.	U
127-18-4-----	Tetrachloroethene	630.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	25.	U
108-88-3-----	Toluene	25.	U
108-90-7-----	Chlorobenzene	25.	U
100-41-4-----	Ethylbenzene	25.	U
100-42-5-----	Styrene	25.	U
1330-20-7-----	Xylene(total)	25.	U

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1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S3-9

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00177

Matrix: (soil/water) WATER

Lab Sample ID: 3285.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3009

Level: (low/med) LOW

Date Received: 5/19/91 1:31/11

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO.

S3-10

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3340.90185

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3058

Level: (low/med) LOW

Date Received: 5/10/91 <sup>KL</sup> 5/9/91 10:31/91

Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U R
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	5.	U
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U S
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	73.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U S
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene(total)	5.	U

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1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S3-10

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3340.9

00186

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3058

Level: (low/med) LOW

Date Received: 5/12/91 *KK* 5/9/91 10/3/91

Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO.

S3-11

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3353.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3050

Level: (low/med) LOW

Date Received: 5/10/91

Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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74-87-3-----	Chloromethane	100.	U
74-83-9-----	Bromomethane	100.	U
75-01-4-----	Vinyl Chloride	100.	U
75-00-3-----	Chloroethane	100.	U
75-09-2-----	Methylene Chloride	50.	U
67-64-1-----	Acetone	100.	U
75-15-0-----	Carbon Disulfide	50.	U
75-35-4-----	1,1-Dichloroethene	50.	U
75-34-3-----	1,1-Dichloroethane	50.	U
540-59-0-----	1,2-Dichloroethene (total)	50.	U
67-66-3-----	Chloroform	50.	U
107-06-2-----	1,2-Dichloroethane	50.	U
78-93-3-----	2-Butanone	100.	U R
71-55-6-----	1,1,1-Trichloroethane	50.	U
56-23-5-----	Carbon Tetrachloride	50.	U
108-05-4-----	Vinyl Acetate	100.	U
75-27-4-----	Bromodichloromethane	50.	U
78-87-5-----	1,2-Dichloropropane	50.	U
10061-01-5-----	cis-1,3-Dichloropropene	50.	U
79-01-6-----	Trichloroethene	50.	U
124-48-1-----	Dibromochloromethane	50.	U
79-00-5-----	1,1,2-Trichloroethane	50.	U
71-43-2-----	Benzene	50.	U J
10061-02-6-----	Trans-1,3-Dichloropropene	50.	U
75-25-2-----	Bromoform	50.	U
108-10-1-----	4-Methyl-2-Pentanone	100.	U
591-78-6-----	2-Hexanone	100.	U
127-18-4-----	Tetrachloroethene	910.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	50.	U
108-88-3-----	Toluene	50.	U J
108-90-7-----	Chlorobenzene	50.	U
100-41-4-----	Ethylbenzene	50.	U
100-42-5-----	Styrene	50.	U
1330-20-7-----	Xylene (total)	50.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TEMPORARILY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S3-11

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3353.0 00192

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3050

Level: (low/med) LOW

Date Received: 5/11/91 10/3/91

% Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

SA SAMPLE NO.

S3-12

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3365.4197

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3060

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	100.	U
74-83-9-----	Bromomethane	100.	U
75-01-4-----	Vinyl Chloride	100.	U
75-00-3-----	Chloroethane	100.	U
75-09-2-----	Methylene Chloride	50.	U
67-64-1-----	Acetone	100.	U
75-15-0-----	Carbon Disulfide	50.	U
75-35-4-----	1,1-Dichloroethene	50.	U
75-34-3-----	1,1-Dichloroethane	50.	U
540-59-0-----	1,2-Dichloroethene (total)	50.	U
67-66-3-----	Chloroform	50.	U
107-06-2-----	1,2-Dichloroethane	50.	U
78-93-3-----	2-Butanone	100.	U R
71-55-6-----	1,1,1-Trichloroethane	50.	U
56-23-5-----	Carbon Tetrachloride	50.	U
108-05-4-----	Vinyl Acetate	100.	U
75-27-4-----	Bromodichloromethane	50.	U
78-87-5-----	1,2-Dichloropropane	50.	U
10061-01-5-----	cis-1,3-Dichloropropene	50.	U
79-01-6-----	Trichloroethene	50.	U
124-48-1-----	Dibromochloromethane	50.	U
79-00-5-----	1,1,2-Trichloroethane	50.	U
71-43-2-----	Benzene	50.	U J
10061-02-6-----	Trans-1,3-Dichloropropene	50.	U
75-25-2-----	Bromoform	50.	U
108-10-1-----	4-Methyl-2-Pentanone	100.	U
591-78-6-----	2-Hexanone	100.	U
127-18-4-----	Tetrachloroethene	930.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	50.	U
108-88-3-----	Toluene	50.	U J
108-90-7-----	Chlorobenzene	50.	U
100-41-4-----	Ethylbenzene	50.	U
100-42-5-----	Styrene	50.	U
1330-20-7-----	Xylene(total)	50.	U

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1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S3-12-

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3365.00198

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3060

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

61-13 53-13

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.: 00203

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3459.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3063

Level: (low/med) LOW

Date Received: 5/12/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-87-3-----	Chloromethane	100.	U
74-83-9-----	Bromomethane	100.	U
75-01-4-----	Vinyl Chloride	100.	U
75-00-3-----	Chloroethane	100.	U
75-09-2-----	Methylene Chloride	50.	U
67-64-1-----	Acetone	100.	U
75-15-0-----	Carbon Disulfide	50.	U
75-35-4-----	1,1-Dichloroethene	50.	U
75-34-3-----	1,1-Dichloroethane	50.	U
540-59-0-----	1,2-Dichloroethene (total)	50.	U
67-66-3-----	Chloroform	50.	U
107-06-2-----	1,2-Dichloroethane	50.	U
78-93-3-----	2-Butanone	100.	U R
71-55-6-----	1,1,1-Trichloroethane	50.	U
56-23-5-----	Carbon Tetrachloride	50.	U
108-05-4-----	Vinyl Acetate	100.	U
75-27-4-----	Bromodichloromethane	50.	U
78-87-5-----	1,2-Dichloropropane	50.	U
10061-01-5-----	cis-1,3-Dichloropropene	50.	U
79-01-6-----	Trichloroethene	50.	U
124-48-1-----	Dibromochloromethane	50.	U
79-00-5-----	1,1,2-Trichloroethane	50.	U
71-43-2-----	Benzene	50.	U J
10061-02-6-----	Trans-1,3-Dichloropropene	50.	U
75-25-2-----	Bromoform	50.	U
108-10-1-----	4-Methyl-2-Pentanone	100.	U
591-78-6-----	2-Hexanone	100.	U
127-18-4-----	Tetrachloroethene	840.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	50.	U
108-88-3-----	Toluene	50.	U J
108-90-7-----	Chlorobenzene	50.	U
100-41-4-----	Ethylbenzene	50.	U
100-42-5-----	Styrene	50.	U
1330-20-7-----	Xylene (total)	50.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TEMPORARILY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

~~51-10~~ 53-13

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

00204 SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3459.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3063

Level: (low/med) LOW

Date Received: 5/12/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO.

S3-14

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

00209 SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3475.8

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3086

Level: (low/med) LOW

Date Received: 5/14/91 8:20  
5/13/91 10/5/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	100.	U
74-83-9-----	Bromomethane	100.	U
75-01-4-----	Vinyl Chloride	100.	U
75-00-3-----	Chloroethane	100.	U
75-09-2-----	Methylene Chloride	50.	U
67-64-1-----	Acetone	100.	U
75-15-0-----	Carbon Disulfide	50.	U
75-35-4-----	1,1-Dichloroethene	50.	U
75-34-3-----	1,1-Dichloroethane	50.	U
540-59-0-----	1,2-Dichloroethene (total)	50.	U
67-66-3-----	Chloroform	50.	U
107-06-2-----	1,2-Dichloroethane	50.	U
78-93-3-----	2-Butanone	100.	U R
71-55-6-----	1,1,1-Trichloroethane	38.	J
56-23-5-----	Carbon Tetrachloride	50.	U
108-05-4-----	Vinyl Acetate	100.	U
75-27-4-----	Bromodichloromethane	50.	U
78-87-5-----	1,2-Dichloropropane	50.	U
10061-01-5-----	cis-1,3-Dichloropropene	50.	U
79-01-6-----	Trichloroethene	37.	J
124-48-1-----	Dibromochloromethane	50.	U
79-00-5-----	1,1,2-Trichloroethane	50.	U
71-43-2-----	Benzene	50.	U S
10061-02-6-----	Trans-1,3-Dichloropropene	50.	U
75-25-2-----	Bromoform	50.	U
108-10-1-----	4-Methyl-2-Pentanone	100.	U
591-78-6-----	2-Hexanone	100.	U
127-18-4-----	Tetrachloroethene	1200.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	50.	U
108-88-3-----	Toluene	50.	U S
108-90-7-----	Chlorobenzene	50.	U
100-41-4-----	Ethylbenzene	50.	U
100-42-5-----	Styrene	50.	U
1330-20-7-----	Xylene(total)	50.	U



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TEMPORARILY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S3-14-

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00210

Matrix: (soil/water) WATER

Lab Sample ID: 3475.8

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3086

Level: (low/med) LOW

Date Received: 5/13/91 <sup>5/14/91</sup> <sup>6/1/91</sup>

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

S3-15

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00217

Matrix: (soil/water) WATER

Lab Sample ID: 3502.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3138

Level: (low/med) LOW

Date Received: 5/15/91 <sup>5/15/91</sup> <sup>5/14/91</sup> <sup>10/31/91</sup>

Moisture: not dec.100.

Date Analyzed: 5/27/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-87-3-----	Chloromethane	100.	U
74-83-9-----	Bromomethane	100.	U
75-01-4-----	Vinyl Chloride	100.	U
75-00-3-----	Chloroethane	100.	U
75-09-2-----	Methylene Chloride	50.	U
67-64-1-----	Acetone	100.	U
75-15-0-----	Carbon Disulfide	50.	U
75-35-4-----	1,1-Dichloroethene	50.	U
75-34-3-----	1,1-Dichloroethane	50.	U
540-59-0-----	1,2-Dichloroethene (total)	50.	U
67-66-3-----	Chloroform	50.	U
107-06-2-----	1,2-Dichloroethane	50.	U
78-93-3-----	2-Butanone	100.	U R
71-55-6-----	1,1,1-Trichloroethane	50.	U
56-23-5-----	Carbon Tetrachloride	50.	U
108-05-4-----	Vinyl Acetate	100.	U
75-27-4-----	Bromodichloromethane	50.	U
78-87-5-----	1,2-Dichloropropane	50.	U
10061-01-5-----	cis-1,3-Dichloropropene	50.	U
79-01-6-----	Trichloroethene	50.	U
124-48-1-----	Dibromochloromethane	50.	U
79-00-5-----	1,1,2-Trichloroethane	50.	U
71-43-2-----	Benzene	50.	U J
10061-02-6-----	Trans-1,3-Dichloropropene	50.	U
75-25-2-----	Bromoform	50.	U
108-10-1-----	4-Methyl-2-Pentanone	100.	U
591-78-6-----	2-Hexanone	100.	U
127-18-4-----	Tetrachloroethene	1200.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	50.	U
108-88-3-----	Toluene	50.	U J
108-90-7-----	Chlorobenzene	50.	U
100-41-4-----	Ethylbenzene	50.	U
100-42-5-----	Styrene	50.	U
1330-20-7-----	Xylene(total)	50.	U

7/16/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S3-15

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00218

Matrix: (soil/water) WATER

Lab Sample ID: 3502.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3138

Level: (low/med) LOW

Date Received: 5/15/91 2100  
5/14/91 10:30

% Moisture: not dec.100.

Date Analyzed: 5/27/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO.

S3-16

00225

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3601.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2711

Level: (low/med) LOW

Date Received: 5/14/91 *ELW* 10/31/91

Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	3.	J
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	3.	J
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	13C.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene (total)	5.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S3-10

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00226

Matrix: (soil/water) WATER

Lab Sample ID: 3601.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2711

Level: (low/med) LOW

Date Received: 5/16/91 <sup>5/16/91</sup> <sup>10/3/91</sup>

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

S3-17

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

00233 SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3613.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3137

Level: (low/med) LOW

Date Received: 5/17/91 <sup>5/17/91</sup> <sup>10/31/91</sup>

Moisture: not dec.100.

Date Analyzed: 5/27/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	100.	U
74-83-9-----	Bromomethane	100.	U
75-01-4-----	Vinyl Chloride	100.	U
75-00-3-----	Chloroethane	100.	U
75-09-2-----	Methylene Chloride	50.	U
67-64-1-----	Acetone	100.	U
75-15-0-----	Carbon Disulfide	50.	U
75-35-4-----	1,1-Dichloroethene	50.	U
75-34-3-----	1,1-Dichloroethane	50.	U
540-59-0-----	1,2-Dichloroethene (total)	50.	U
67-66-3-----	Chloroform	50.	U
107-06-2-----	1,2-Dichloroethane	50.	U
78-93-3-----	2-Butanone	100.	U R
71-55-6-----	1,1,1-Trichloroethane	50.	U
56-23-5-----	Carbon Tetrachloride	50.	U
108-05-4-----	Vinyl Acetate	100.	U
75-27-4-----	Bromodichloromethane	50.	U
78-87-5-----	1,2-Dichloropropane	50.	U
10061-01-5-----	cis-1,3-Dichloropropene	50.	U
79-01-6-----	Trichloroethene	50.	U
124-48-1-----	Dibromochloromethane	50.	U
79-00-5-----	1,1,2-Trichloroethane	50.	U
71-43-2-----	Benzene	50.	U J
10061-02-6-----	Trans-1,3-Dichloropropene	50.	U
75-25-2-----	Bromoform	50.	U
108-10-1-----	4-Methyl-2-Pentanone	100.	U
591-78-6-----	2-Hexanone	100.	U
127-18-4-----	Tetrachloroethene	1200.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	50.	U
108-88-3-----	Toluene	50.	U J
108-90-7-----	Chlorobenzene	50.	U
100-41-4-----	Ethylbenzene	50.	U
100-42-5-----	Styrene	50.	U
1330-20-7-----	Xylene(total)	50.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TEMPORARILY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S3-17

Lab Name: PACE

Contract:

00234

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3613.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3137

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/27/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

S3-18

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

00241SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3659.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3201

Level: (low/med) LOW

Date Received: 5/18/91 5/17/91 5/13/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

74-87-3-----	Chloromethane	100.	U
74-83-9-----	Bromomethane	100.	U
75-01-4-----	Vinyl Chloride	100.	U
75-00-3-----	Chloroethane	100.	U
75-09-2-----	Methylene Chloride	50.	U
67-64-1-----	Acetone	100.	U
75-15-0-----	Carbon Disulfide	50.	U
75-35-4-----	1,1-Dichloroethene	50.	U
75-34-3-----	1,1-Dichloroethane	50.	U
540-59-0-----	1,2-Dichloroethene (total)	50.	U
67-66-3-----	Chloroform	50.	U
107-06-2-----	1,2-Dichloroethane	50.	U
78-93-3-----	Butanone	100.	U R
71-55-6-----	1,1,1-Trichloroethane	50.	U
56-23-5-----	Carbon Tetrachloride	50.	U
108-05-4-----	Vinyl Acetate	100.	U
75-27-4-----	Bromodichloromethane	50.	U
78-87-5-----	1,2-Dichloropropane	50.	U
10061-01-5-----	cis-1,3-Dichloropropene	50.	U
79-01-6-----	Trichloroethene	50.	U
124-48-1-----	Dibromochloromethane	50.	U
79-00-5-----	1,1,2-Trichloroethane	50.	U
71-43-2-----	Benzene	50.	U J
10061-02-6-----	Trans-1,3-Dichloropropene	50.	U
75-25-2-----	Bromoform	50.	U
108-10-1-----	4-Methyl-2-Pentanone	100.	U
591-78-6-----	2-Hexanone	100.	U
127-18-4-----	Tetrachloroethene	100.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	50.	U
108-88-3-----	Toluene	50.	U J
108-90-7-----	Chlorobenzene	50.	U
100-41-4-----	Ethylbenzene	50.	U
100-42-5-----	Styrene	50.	U
1330-20-7-----	Xylene(total)	50.	U

FORM I VOA

1/87 Rev.



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S3-18-

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3659.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3201

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

S3-19

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.: 00249SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3671.8

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3205

Level: (low/med) LOW

Date Received: 5/18/91

Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L
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Q

74-87-3-----	Chloromethane	100.	U
74-83-9-----	Bromomethane	100.	U
75-01-4-----	Vinyl Chloride	100.	U
75-00-3-----	Chloroethane	100.	U
75-09-2-----	Methylene Chloride	50.	U
67-64-1-----	Acetone	100.	U
75-15-0-----	Carbon Disulfide	50.	U
75-35-4-----	1,1-Dichloroethene	50.	U
75-34-3-----	1,1-Dichloroethane	50.	U
540-59-0-----	1,2-Dichloroethene (total)	50.	U
67-66-3-----	Chloroform	50.	U
107-06-2-----	1,2-Dichloroethane	50.	U
78-93-3-----	2-Butanone	100.	U R
71-55-6-----	1,1,1-Trichloroethane	50.	U
56-23-5-----	Carbon Tetrachloride	50.	U
108-05-4-----	Vinyl Acetate	100.	U
75-27-4-----	Bromodichloromethane	50.	U
78-87-5-----	1,2-Dichloropropane	50.	U
10061-01-5-----	cis-1,3-Dichloropropene	50.	U
79-01-6-----	Trichloroethene	57.	U
124-48-1-----	Dibromochloromethane	50.	U
79-00-5-----	1,1,2-Trichloroethane	50.	U
71-43-2-----	Benzene	50.	U J
10061-02-6-----	Trans-1,3-Dichloropropene	50.	U
75-25-2-----	Bromoform	50.	U
108-10-1-----	4-Methyl-2-Pentanone	100.	U
591-78-6-----	2-Hexanone	100.	U
127-18-4-----	Tetrachloroethene	1600.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	50.	U
108-88-3-----	Toluene	50.	U J
108-90-7-----	Chlorobenzene	50.	U
100-41-4-----	Ethylbenzene	50.	U
100-42-5-----	Styrene	50.	U
1330-20-7-----	Xylene(total)	50.	U

FORM I VOA

1/87 Rev.

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S3-19-

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

00250

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3671.8

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3205

Level: (low/med) LOW

Date Received: 5/18/91

Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO.

S3-20

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.: 00258

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3731.5

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2814

Level: (low/med) LOW

Date Received: 5/19/91 <sup>5/19/91</sup> <sup>10/13/91</sup>

Moisture: not dec.100.

Date Analyzed: 5/31/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-87-3-----	Chloromethane	100.	U
74-83-9-----	Bromomethane	100.	U
75-01-4-----	Vinyl Chloride	100.	U
75-00-3-----	Chloroethane	100.	U
75-09-2-----	Methylene Chloride	21.	J
67-64-1-----	Acetone	100.	U
75-15-0-----	Carbon Disulfide	50.	U
75-35-4-----	1,1-Dichloroethene	50.	U
75-34-3-----	1,1-Dichloroethane	50.	U
540-59-0-----	1,2-Dichloroethene (total)	13.	J
67-66-3-----	Chloroform	50.	U
107-06-2-----	1,2-Dichloroethane	50.	U
78-93-3-----	2-Butanone	100.	U
71-55-6-----	1,1,1-Trichloroethane	41.	J
56-23-5-----	Carbon Tetrachloride	50.	U
108-05-4-----	Vinyl Acetate	100.	U
75-27-4-----	Bromodichloromethane	50.	U
78-87-5-----	1,2-Dichloropropane	50.	U
10061-01-5-----	cis-1,3-Dichloropropene	50.	U
79-01-6-----	Trichloroethene	58.	
124-48-1-----	Dibromochloromethane	50.	U
79-00-5-----	1,1,2-Trichloroethane	50.	U
71-43-2-----	Benzene	50.	U
10061-02-6-----	Trans-1,3-Dichloropropene	50.	U
75-25-2-----	Bromoform	50.	U
108-10-1-----	4-Methyl-2-Pentanone	100.	U
591-78-6-----	2-Hexanone	100.	U
127-18-4-----	Tetrachloroethene	100.	
79-34-5-----	1,1,2,2-Tetrachloroethane	50.	U
108-88-3-----	Toluene	50.	U
108-90-7-----	Chlorobenzene	50.	U
100-41-4-----	Ethylbenzene	50.	U
100-42-5-----	Styrene	50.	U
1330-20-7-----	Xylene (total)	50.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TEMPORARILY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S3-23

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3731.5

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2814

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/31/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO.

S4-1

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

0026<sup>11</sup>SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3019.1

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2550

Level: (low/med) LOW

Date Received: 5/1/91 *5/2/91*

% Moisture: not dec.100.

Date Analyzed: 5/12/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	3.	J
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	170.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene (total)	5.	U

FORM I VOA

1/87 Rev.

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TEMPORARILY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S4-1

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

00269  
SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3019.1

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2550

Level: (low/med) LOW

Date Received: 5/1/91 <sup>5/1/91</sup> <sup>10/13/91</sup> LK

% Moisture: not dec.100.

Date Analyzed: 5/12/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

S4-2

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No. 00275

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3039.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2589

Level: (low/med) LOW

Date Received: 5/2/91 <sup>5/2/91</sup> ~~5/1/91~~ <sup>10/3/91</sup>

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethane	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethane (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U R
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	3.	J
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U J
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	90.	
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	1.	U J
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene (total)	5.	U



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S4-2

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDS No.: 00278

Matrix: (soil/water) WATER

Lab Sample ID: 3039.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2589

Level: (low/med) LOW

Date Received: 5/2/91 *5/1/91*

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

LAB SAMPLE NO.

S4-3

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00283

Matrix: (soil/water) WATER

Lab Sample ID: 3130.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2906

Level: (low/med) LOW

Date Received: 5/3/91 *itd*  
~~5/2/91~~ 10/3/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	50.	U
74-83-9-----	Bromomethane	50.	U
75-01-4-----	Vinyl Chloride	50.	U
75-00-3-----	Chloroethane	50.	U
75-09-2-----	Methylene Chloride	25.	U
67-64-1-----	Acetone	50.	U
75-15-0-----	Carbon Disulfide	25.	U
75-35-4-----	1,1-Dichloroethene	25.	U
75-34-3-----	1,1-Dichloroethane	25.	U
540-59-0-----	1,2-Dichloroethene (total)	25.	U
67-66-3-----	Chloroform	25.	U
107-06-2-----	1,2-Dichloroethane	25.	U
78-93-3-----	2-Butanone	50.	U R
71-55-6-----	1,1,1-Trichloroethane	25.	U
56-23-5-----	Carbon Tetrachloride	25.	U
108-05-4-----	Vinyl Acetate	50.	U
75-27-4-----	Bromodichloromethane	25.	U
78-87-5-----	1,2-Dichloropropane	25.	U
10061-01-5-----	cis-1,3-Dichloropropene	25.	U
79-01-6-----	Trichloroethene	25.	U
124-48-1-----	Dibromochloromethane	25.	U
79-00-5-----	1,1,2-Trichloroethane	25.	U
71-43-2-----	Benzene	25.	U J
10061-02-6-----	Trans-1,3-Dichloropropene	25.	U
75-25-2-----	Bromoform	25.	U
108-10-1-----	4-Methyl-2-Pentanone	50.	U
591-78-6-----	2-Hexanone	50.	U
127-18-4-----	Tetrachloroethene	280.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	25.	U
108-88-3-----	Toluene	25.	U J
108-90-7-----	Chlorobenzene	25.	U
100-41-4-----	Ethylbenzene	25.	U
100-42-5-----	Styrene	25.	U
1330-20-7-----	Xylene (total)	25.	U

*per*  
7/18/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TEMPORARILY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S4-3

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3130.9

00284

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2906

Level: (low/med) LOW

Date Received: 5/3/91 <sup>EL</sup> 10/3/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/1/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Data quality for this sample delivery group was excellent. Positive methylene chloride, chloroform, and toluene results reported in Samples S1-4 and S1-4 DUP were qualified as less than the reported values. Detection limits for aromatic compounds were qualified as estimates. These samples were apparently shipped via overnight courier; however, this information was not provided on the chain of custody forms.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Five samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 1, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-4 TB	3048	05/01/91
S1-4	3049	05/01/91
S1-4 DUP	3059	05/01/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-4DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00039

Matrix: (soil/water) WATER

Lab Sample ID: 3050

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2512

Level: (low/med) LOW

Date Received: 5/ 2/91

% Moisture: not dec.100.

Date Analyzed: 5/ 9/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



## **I. Holding Times**

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimated for all three samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### **A. Initial**

Initial calibration criteria were met on 4/24/91 (Instrument J).

Initial calibration criteria were met on 5/6/91 (Instrument G) with with exception of the RF for 2-butanone (actual 0.033; criteria 0.1) and the %RSD for 2-butanone (actual 37.3; criteria 30). Detection limits for 2-butanone were rejected in Sample S1-4 TB.

### **B. Continuing**

Continuing calibration criteria were met on 5/8/91 (Instrument J) with the exception of the % difference for acetone (actual 25.7; criteria 25), 2-butanone (actual 31.1; criteria 25), and vinyl acetate (actual 27.1; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/9/91 (Instrument G) with the exception of the RF for 2-butanone (actual 0.03; criteria 0.1) and the % difference for bromoform (actual 30.1; criteria 25). Data were not affected.

#### IV. Blanks

Methylene chloride was reported in the Method Blanks VBLK01 and VBLK02. Methylene chloride results for Samples S1-4 and S1-4 DUP were qualified as less than the reported values. Chloroform and toluene, although not reported on the Form Is for Method Blanks VBLK01 and VBLK02, were listed on the quant reports for both samples. Chloroform and toluene results for Samples S1-4 and S1-4 DUP were qualified as less than the reported values.

#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S1-4. Data were within acceptance criteria.

#### VII. Field Duplicates

Compounds and concentrations (ug/L) reported in Samples S1-4 and S1-4 DUP were as follows:

Compound	S1-4	S1-4 DUP
Trichloroethene	11	9
Tetrachloroethene	280	280
Acetone	17	

Because acetone was found in only one of the duplicate samples, the value reported for acetone in Sample S1-4 was rejected. Other data were within acceptance criteria.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### **X. Compound Quantitation and Reported Detection Limits**

Results and detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were reported for this SDG.

#### **XII. System Performance**

System performance requires attention. Manual integrations should be addressed. All samples exceeded the required holding time.

#### **XIII. Overall Assessment of Data for a Case**

Data quality for this sample delivery group was excellent. Values reported for methylene chloride, chloroform, and toluene were qualified as less than the reported values due to laboratory contamination. Detection limits for aromatic compounds were estimated in all samples. The detection limit for 2-butanone was rejected in Sample S1-4TB. The acetone result in Sample S1-4 was rejected.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-4TB

00022

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3048

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62836

Level: (low/med) LOW

Date Received: 5/ 2/91

Moisture: not dec.100.

Date Analyzed: 5/ 9/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/L
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	5.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U R
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U J
10061-02-6	Trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	U J
108-90-7	Chlorobenzene	5.	U J
100-41-4	Ethylbenzene	5.	U J
100-42-5	Styrene	5.	U J
1330-20-7	Xylene (total)	5.	U J

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-4TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No. 00023

Matrix: (soil/water) WATER

Lab Sample ID: 3048

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2836

Level: (low/med) LOW

Date Received: 5/ 2/91

% Moisture: not dec.100.

Date Analyzed: 5/ 9/91

Column: (pac/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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1A  
VOI TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-4

00027

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3049

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2509

Level: (low/med) LOW

Date Received: 5/ 2/91

% Moisture: not dec.100.

Date Analyzed: 5/ 9/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	25.	U
74-83-9	-----Bromomethane	25.	U
75-01-4	-----Vinyl Chloride	25.	U
75-00-3	-----Chloroethane	25.	U
75-09-2	-----Methylene Chloride	13.	BU
67-64-1	-----Acetone	17.	JR
75-15-0	-----Carbon Disulfide	12.	U
75-35-4	-----1,1-Dichloroethene	12.	U
75-34-3	-----1,1-Dichloroethane	12.	U
540-59-0	-----1,2-Dichloroethene (total)	12.	U
67-66-3	-----Chloroform	4.	BU
107-06-2	-----1,2-Dichloroethane	12.	U
78-93-3	-----2-Butanone	25.	U
71-55-6	-----1,1,1-Trichloroethane	12.	U
56-23-5	-----Carbon Tetrachloride	12.	U
108-05-4	-----Vinyl Acetate	25.	U
75-27-4	-----Bromodichloromethane	12.	U
78-87-5	-----1,2-Dichloropropane	12.	U
10061-01-5	-----cis-1,3-Dichloropropene	12.	U
79-01-6	-----Trichloroethene	11.	J
124-48-1	-----Dibromochloromethane	12.	U
79-00-5	-----1,1,2-Trichloroethane	12.	U
71-43-2	-----Benzene	12.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	12.	U
75-25-2	-----Bromoform	12.	U
108-10-1	-----4-Methyl-2-Pentanone	25.	U
591-78-6	-----2-Hexanone	25.	U
127-18-4	-----Tetrachloroethene	280.	
79-34-5	-----1,1,2,2-Tetrachloroethane	12.	U
108-88-3	-----Toluene	6.	BU
108-90-7	-----Chlorobenzene	12.	UJ
100-41-4	-----Ethylbenzene	12.	UJ
100-42-5	-----Styrene	12.	UJ
1330-20-7	-----Xylene (total)	12.	UJ

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-4

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00028

Matrix: (soil/water) WATER

Lab Sample ID: 3049

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2509

Level: (low/med) LOW

Date Received: 5/ 2/91

% Moisture: not dec.100.

Date Analyzed: 5/ 9/91

Column: (pack./cap) PACK

Dilution Factor: 2.50

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-4DUP

00038

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3050

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2512

Level: (low/med) LOW

Date Received: 5/ 2/91

% Moisture: not dec.100.

Date Analyzed: 5/ 9/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3	-----Chloromethane	25.	U
74-83-9	-----Bromomethane	25.	U
75-01-4	-----Vinyl Chloride	25.	U
75-00-3	-----Chloroethane	25.	U
75-09-2	-----Methylene Chloride	10.	U
67-64-1	-----Acetone	25.	U
75-15-0	-----Carbon Disulfide	12.	U
75-35-4	-----1,1-Dichloroethene	12.	U
75-34-3	-----1,1-Dichloroethane	12.	U
540-59-0	-----1,2-Dichloroethene (total)	12.	U
67-66-3	-----Chloroform	3.	U
107-06-2	-----1,2-Dichloroethane	12.	U
78-93-3	-----2-Butanone	25.	U
71-55-6	-----1,1,1-Trichloroethane	12.	U
56-23-5	-----Carbon Tetrachloride	12.	U
108-05-4	-----Vinyl Acetate	25.	U
75-27-4	-----Bromodichloromethane	12.	U
78-87-5	-----1,2-Dichloropropane	12.	U
10061-01-5	-----cis-1,3-Dichloropropene	12.	U
79-01-6	-----Trichloroethene	9.	J
124-48-1	-----Dibromochloromethane	12.	U
79-00-5	-----1,1,2-Trichloroethane	12.	U
71-43-2	-----Benzene	12.	U
10061-02-6	-----Trans-1,3-Dichloropropene	12.	U
75-25-2	-----Bromoform	12.	U
108-10-1	-----4-Methyl-2-Pentanone	25.	U
591-78-6	-----2-Hexanone	25.	U
127-18-4	-----Tetrachloroethene	280.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	12.	U
108-88-3	-----Toluene	6.	U
108-90-7	-----Chlorobenzene	12.	U
100-41-4	-----Ethylbenzene	12.	U
100-42-5	-----Styrene	12.	U
1330-20-7	-----Xylene (total)	12.	U



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-4DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00039

Matrix: (soil/water) WATER

Lab Sample ID: 3050

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2512

Level: (low/med) LOW

Date Received: 5/ 2/91

% Moisture: not dec.100.

Date Analyzed: 5/ 9/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEMS

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 05/01/91

Chemical Analyses Performed By

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

No valid target compounds were detected. All non-detects were qualified as estimates due to the manual integration of areas for all three internal standards and the majority of the target compounds. Documentation to support these manual integrations has been requested from the laboratory. When received the data will be re-evaluated.

No data was provided for sample S4-2. The sample was not analyzed by Method 524.2.

The date of sample collection is not provided on some of the chain of custody records. This will need to be addressed to provide defensible data.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

**Data Validation for  
Environmental Project Control, Inc.**

Samples Collected May 1, 1991

Volatiles Analyses Data

Method 524.2 Analyses

**Case Narrative**

Nine treatment system samples were collected May 1, 1991 and submitted to Pace, Inc. May 2, 1991. The laboratory was requested to perform purgeable volatile analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  range may adversely affect the more volatile compounds.

No valid target compounds were detected. Benzene is reported at 1.2 ppb in sample S3-2FB but this result is not supported by the raw data. All non-detects have been qualified as estimates due to manual integration of internal standard and target compound areas. No data were provided for sample S4-2 because the sample was not analyzed by Method 524.2.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3035	S1-4FB	05/01/91
3036	S2-2	05/01/91
3037	S3-2FB	05/01/91
3038	S3-2	05/01/91
3039	S4-2	05/01/91
3040	S5-2	05/01/91
3041	S6-4	05/01/91
3042	S6-4Dup	05/01/91
3043	S6-4TB	05/01/91

The areas reviewed during validation are listed below.

## ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment of Data for a Case

## DATA VALIDATION

### I. Sample Holding Times

All samples were analyzed outside the 7-day holding time for non-preserved samples but within the 14-day holding time for aqueous volatile samples. Detection limits for aromatic compounds were qualified as estimates for all samples.

### II. Instrument Performance

Inst. F met bromofluorobenzene (BFB) ion abundance criteria on 05/11/91 1632, 05/13/91 1016, 05/14/91 1038, 05/14/91 2304, and 05/15/91 1354.

### III. Calibration

The areas for all internal standards and most of the target compounds were manually integrated. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. This validation has been completed on the assumption that the manual integrations as done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all affected compounds for the associated samples have been qualified as estimates.

#### 1) Initial Calibration 05/12/91 Inst F

All compounds met the 0.10 response factor criteria established for this project.

All compounds met the 30% relative standard deviation (%RSD) criteria.

Continuing Calibration 05/12/91 1151 on Inst. F met criteria with the exception of the percent difference (%D) for trans-1,3-dichloropropene (35%). This compound was not detected and no data were qualified.

Continuing Calibration criteria were met on 05/13/91 1107 and 05/14/91 1201 on Inst. F.

Continuing Calibration 05/14/91 2338 on Inst. F met criteria with the exceptions of bromodichloromethane (28%) and trans-1,3-dichloropropene (31%). These compounds were not detected and no data were qualified.

Continuing Calibration 05/15/91 1446 on Inst. F met criteria with the exception of trans-1,3-dichloropropene (46%). This compound was not detected and no data have been qualified.

#### **IV. Blanks**

No target compounds were detected in the four method blanks, the trip blank or the field blank identified as S1-4FB. The field blank identified as S3-2FB had benzene reported at 1.2 ppb but this value is not supported by the raw data. The benzene result has been rejected.

#### **V. Surrogate Recovery**

All surrogate recoveries were within control limits with the exception of toluene-d8 in sample S2-2. The recovery was 77% and the lower limit is 88%. The sample was not reanalyzed. No target compounds were detected and no data have been qualified.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

All matrix spike recoveries are within the established advisory limits.

The Relative Percent Difference (RPD) between matrix spike (MS) and matrix spike duplicate (MSD) recoveries are within the established QC limits with the exceptions of 1,1-dichloroethene, trichloroethene and benzene. These compounds were not detected in the unspiked sample and no data have been qualified.

#### **VII. Field Quality Control Samples**

Sample S6-4 and S6-4Dup were submitted as duplicate samples. No target compounds were detected in either sample.

No valid target compounds were detected in the field or trip blanks.

#### **VIII. Internal Standards Performance**

All retention times (RT) and internal standard (IS) areas are acceptable.

**IX. TCL Compound Identification**

No compounds were detected.

**X. Compound Quantitation and Reported Detection Limits**

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined by the PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined by the PQL study are as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
vinyl chloride	0.48
chloroethane	0.49
methylene chloride	4.41
1,1-dichloroethene	0.67
1,1-dichloroethane	0.54
trans-1,2-dichloroethene	0.50
chloroform	0.53
1,2-dichloroethane	0.52
1,1,1-trichloroethane	0.44
carbon tetrachloride	0.43
bromodichloromethane	0.38
1,2-dichloropropane	0.45
cis-1,3-dichloropropene	0.33
trichloroethene	0.42
dibromochloromethane	0.33
1,1,2-trichloroethane	0.43
benzene	0.58
trans-1,3-dichloropropene	0.07
bromoform	0.49
tetrachloroethene	0.51
1,1,2,2-tetrachloroethane	0.44
toluene	0.45
chlorobenzene	0.44
ethylbenzene	0.51
m-xylene	0.48
o-, p-xylene	0.93
1,2-dichloroethane-d4	0.50
toluene-d8	0.45
bromofluorobenzene	0.36

The above MDLs should be applied to these data.

**XI. Tentatively Identified Compounds**

No TICs were detected in this sample delivery group.



## **XII. System Performance**

System performance was acceptable.

## **XIII. Overall Assessment of Data for a Case**

No valid target compounds were detected. All non-detects have been qualified as estimates due to manual integration of internal standard and target compound areas. No data were provided for sample S4-2 because the sample was not analyzed by Method 524.2.

00030

Unifirst

PACE Project Number: 810502500

PACE Sample Number:

95 0030353

Date Collected:

05/01/91

Date Received:

05/02/91

ParameterUnitsMDLSI-4FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND <u>us</u>
Chloroethane	ug/L	0.5	ND <u>us</u>
Methylene chloride	ug/L	0.5	ND <u>us</u>
1,1-Dichloroethene	ug/L	0.5	ND <u>us</u>
1,1-Dichloroethane	ug/L	0.5	ND <u>us</u>
trans-1,2-Dichloroethene	ug/L	0.5	ND <u>us</u>
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND <u>us</u>
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND <u>us</u>
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND <u>us</u>
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND <u>us</u>
Xylene, total	ug/L	0.5	ND <u>us</u>

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810502500

00034

PACE Sample Number:

95 0030361

Date Collected:

05/01/91

Date Received:

05/02/91

ParameterUnitsMDLS2-2ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND u5
Chloroethane	ug/L	0.5	ND u5
Methylene chloride	ug/L	0.5	ND u5
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND u5
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND u5
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND u5
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND u5
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND u5
Xylene, total	ug/L	0.5	ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00039

Unifirst

PACE Project Number: 810502500

PACE Sample Number:

95 0030370

Date Collected:

05/01/91

Date Received:

05/02/91

ParameterUnitsMDLS3-2FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

vinyl chloride	ug/L	0.5	ND 45
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND 45
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND 45
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND 45
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND 45
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND 45
Xylene, total	ug/L	0.5	ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810502500

00043

PACE Sample Number:

95 0030388

Date Collected:

05/01/91

Date Received:

05/02/91

ParameterUnitsMDLS3-2ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND u5
Chloroethane	ug/L	0.5	ND u5
Methylene chloride	ug/L	0.5	ND u5
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND u5
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND u5
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND u5
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND u5
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND u5
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

Unifirst

PACE Project Number: 810502500

00047

PACE Sample Number:

95 0030400

Date Collected:

05/01/91

Date Received:

05/02/91

ParameterUnitsMDLS5-2ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND <u>us</u>
Chloroethane	ug/L	0.5	ND <u>us</u>
Methylene chloride	ug/L	0.5	ND <u>us</u>
1,1-Dichloroethene	ug/L	0.5	ND <u>I</u>
1,1-Dichloroethane	ug/L	0.5	ND <u>I</u>
trans-1,2-Dichloroethene	ug/L	0.5	ND <u>us</u>
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND <u>us</u>
1,2-Dichloroethane	ug/L	0.5	ND <u>I</u>
1,1,1-Trichloroethane	ug/L	0.5	ND <u>I</u>
Carbon tetrachloride	ug/L	0.5	ND <u>I</u>
Bromodichloromethane	ug/L	0.5	ND <u>I</u>
1,2-Dichloropropane	ug/L	0.5	ND <u>us</u>
cis-1,3-Dichloropropene	ug/L	0.5	ND <u>I</u>
Trichloroethene	ug/L	0.5	ND <u>I</u>
Dibromochloromethane	ug/L	0.5	ND <u>I</u>
1,1,2-Trichloroethane	ug/L	0.5	ND <u>I</u>
Benzene	ug/L	0.5	ND <u>I</u>
trans-1,3-Dichloropropene	ug/L	0.5	ND <u>us</u>
Bromoform	ug/L	0.5	ND <u>I</u>
Tetrachloroethene	ug/L	0.5	ND <u>I</u>
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND <u>I</u>
Toluene	ug/L	0.5	ND <u>I</u>
Chlorobenzene	ug/L	0.5	ND <u>I</u>
Ethyl benzene	ug/L	0.5	ND <u>us</u>
Xylene, total	ug/L	0.5	ND <u>+</u>

MDL Method Detection Limit

ND Not detected at or above the MDL.

00051

Unifirst

PACE Project Number: 810502500

PACE Sample Number:

95 0030418

Date Collected:

05/01/91

Date Received:

05/02/91

ParameterUnitsMDLS6-4ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

vinyl chloride	ug/L	0.5	ND u5
Chloroethane	ug/L	0.5	ND u5
Methylene chloride	ug/L	0.5	ND u5
1,1-Dichloroethene	ug/L	0.5	ND 1
1,1-Dichloroethane	ug/L	0.5	ND 1
trans-1,2-Dichloroethene	ug/L	0.5	ND u5
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND u5
1,2-Dichloroethane	ug/L	0.5	ND 1
1,1,1-Trichloroethane	ug/L	0.5	ND 1
Carbon tetrachloride	ug/L	0.5	ND 1
Bromodichloromethane	ug/L	0.5	ND 1
1,2-Dichloropropane	ug/L	0.5	ND u5
cis-1,3-Dichloropropene	ug/L	0.5	ND 1
Trichloroethene	ug/L	0.5	ND 1
Dibromochloromethane	ug/L	0.5	ND 1
1,1,2-Trichloroethane	ug/L	0.5	ND 1
Benzene	ug/L	0.5	ND 1
trans-1,3-Dichloropropene	ug/L	0.5	ND u5
Bromoform	ug/L	0.5	ND 1
Tetrachloroethene	ug/L	0.5	ND 1
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND 1
Toluene	ug/L	0.5	ND 1
Chlorobenzene	ug/L	0.5	ND 1
Ethyl benzene	ug/L	0.5	ND u5
Xylene, total	ug/L	0.5	ND 1

MDL Method Detection Limit

ND Not detected at or above the MDL.

00055

Unifirst

PACE Project Number: 810502500

PACE Sample Number:

95 0030426

Date Collected:

05/01/91

Date Received:

05/02/91

ParameterUnitsMDLS6-4 DUPORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND <u>u5</u>
Chloroethane	ug/L	0.5	ND <u>u5</u>
Methylene chloride	ug/L	0.5	ND <u>u5</u>
1,1-Dichloroethene	ug/L	0.5	ND <u>1</u>
1,1-Dichloroethane	ug/L	0.5	ND <u>1</u>
trans-1,2-Dichloroethene	ug/L	0.5	ND <u>u5</u>
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND <u>u5</u>
1,2-Dichloroethane	ug/L	0.5	ND <u>1</u>
1,1,1-Trichloroethane	ug/L	0.5	ND <u>1</u>
Carbon tetrachloride	ug/L	0.5	ND <u>1</u>
Bromodichloromethane	ug/L	0.5	ND <u>1</u>
1,2-Dichloropropane	ug/L	0.5	ND <u>u5</u>
cis-1,3-Dichloropropene	ug/L	0.5	ND <u>1</u>
Trichloroethene	ug/L	0.5	ND <u>1</u>
Dibromochloromethane	ug/L	0.5	ND <u>1</u>
1,1,2-Trichloroethane	ug/L	0.5	ND <u>1</u>
Benzene	ug/L	0.5	ND <u>1</u>
trans-1,3-Dichloropropene	ug/L	0.5	ND <u>u5</u>
Bromoform	ug/L	0.5	ND <u>1</u>
Tetrachloroethene	ug/L	0.5	ND <u>1</u>
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND <u>1</u>
Toluene	ug/L	0.5	ND <u>1</u>
Chlorobenzene	ug/L	0.5	ND <u>1</u>
Ethyl benzene	ug/L	0.5	ND <u>u5</u>
Xylene, total	ug/L	0.5	ND <u>1</u>

MDL Method Detection Limit  
 ND Not detected at or above the MDL.



Unifirst

PACE Project Number: 810502500

PACE Sample Number:

95 0030434

Date Collected:

05/01/91

Date Received:

05/02/91

S6-4 TRIP

BLANK

ParameterUnitsMDLORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	u5
Chloroethane	ug/L	0.5	ND	u5
Methylene chloride	ug/L	0.5	ND	u5
1,1-Dichloroethene	ug/L	0.5	ND	1
1,1-Dichloroethane	ug/L	0.5	ND	1
trans-1,2-Dichloroethene	ug/L	0.5	ND	u5
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	u5
1,2-Dichloroethane	ug/L	0.5	ND	1
1,1,1-Trichloroethane	ug/L	0.5	ND	1
Carbon tetrachloride	ug/L	0.5	ND	1
Bromodichloromethane	ug/L	0.5	ND	1
1,2-Dichloropropane	ug/L	0.5	ND	u5
cis-1,3-Dichloropropene	ug/L	0.5	ND	1
Trichloroethene	ug/L	0.5	ND	1
Dibromochloromethane	ug/L	0.5	ND	1
1,1,2-Trichloroethane	ug/L	0.5	ND	1
Benzene	ug/L	0.5	ND	1
trans-1,3-Dichloropropene	ug/L	0.5	ND	u5
Bromoform	ug/L	0.5	ND	1
Tetrachloroethene	ug/L	0.5	ND	1
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	1
Toluene	ug/L	0.5	ND	1
Chlorobenzene	ug/L	0.5	ND	1
Ethyl benzene	ug/L	0.5	ND	u5
Xylene, total	ug/L	0.5	ND	1

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

INORGANIC ANALYSES DATA

Samples Collected 5/1/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Only dissolved cadmium, chromium, copper, and zinc were analyzed. Cadmium, copper, and zinc results were qualified as less than their reported values due to blank contamination.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

Inorganic Data Validation  
for  
Environmental Project Control, Inc.

Samples Collected 5/1/91

Case Narrative

This group contained four water samples including one field blank. The samples were analyzed for only dissolved metals (cadmium, chromium, copper, and zinc). The samples were field filtered.

Samples validated in this report are noted below:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
A-1	3150	5/1/91
A-4FB	3153	5/1/91
A5R7-10	3154	5/1/91
A6R1-6	3155	5/1/91

The areas reviewed during validation are listed below.

**CLP Inorganics Data Validation**

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
- IX. ICP Serial Dilution Analysis
- X. Detection Limits
- XI. Sample Result Verification
- XII. Overall Assessment

## **Data Validation**

### **I. Holding Times**

Samples were analyzed within acceptable holding times.

### **II. Calibration**

Instrument calibration was satisfactory.

### **III. Blanks**

The field blank, A-4FB, contained copper (60 ug/L) at more than twice the CRDL (25 ug/L). All copper values were qualified as less than their reported values.

The preparation blank was clean.

The CCB's for cadmium were slightly above the IDL. Cadmium results were qualified as less than the reported values.

The CCB's for zinc were above the IDL. Zinc results were qualified as less than the reported values.

### **IV. ICP Interference Check Sample**

ICS results were satisfactory.

### **V. Matrix Spike Sample Analysis**

The case narrative indicated that sample A-1 was spiked as the matrix spike. However, the chain of custody included a sample designated as A-3MS (the results for which were not otherwise reported) which was presumed to be the sample used for the matrix spike. Consequently, it was unclear if a portion of A-1 was spiked or if A-3MS was spiked. Matrix spike results were satisfactory.

### **VI. Duplicate Sample Analysis**

The case narrative indicated that sample A-1 was duplicated. However, the chain of custody included a sample designated as A-2FD (the results for which were not otherwise reported) which was presumed to be the sample to be used for the duplicate. Consequently, it was unclear if a portion of A-1 was duplicated or if A-2FD was used. Duplicate results were satisfactory.

**VII. Laboratory Control Sample Analysis**

LCS results were satisfactory.

**VIII. Furnace Atomic Absorption Analysis**

Furnace analyses were satisfactory.

**IX. ICP Serial Dilution Analysis**

Serial dilution results were satisfactory although concentrations were not sufficiently high to be meaningful.

**X. Detection Limits**

IDL's were less than the CRDL's.

The cadmium value reported for A-4FB was less than the IDL. This value was qualified as less than the IDL. The cadmium values reported for the other samples contained two decimal places suggesting sensitivity and precision that probably does not exist. These data were rounded to one decimal place.

**XI. Sample Result Verification**

Concentrations were calculated correctly.

**XII. Overall Assessment**

All copper values were qualified as less than their reported values.

Cadmium and zinc results were qualified as less than the reported values due to calibration blank values above the IDL.

The cadmium value reported for A-4FB was less than the IDL. This value was qualified as less than the IDL. The cadmium values reported for the other samples contained two decimal places suggesting sensitivity and precision that probably does not exist. These data were rounded to one decimal place.

## DATA SUMMARY FORM: INORGANICS

Page 1 of 1

Site Name: Wells G &amp; H

WATER SAMPLES  
(ug/L)

Case #: 810503.509

Sampling Date(s): 5/1/91

Sample No Dilution Factor Location Lab ID		3150		3153		3154		3155													
		1		1		1		1													
		A-1		A-4FB		A5R7-10		A6R1-6													
CRDL																					
200	Aluminum	N/R		N/R		N/R		N/R													
60	Antimony	N/R		N/R		N/R		N/R													
10	*Arsenic	N/R		N/R		N/R		N/R													
200	Barium	N/R		N/R		N/R		N/R													
5	Beryllium	N/R		N/R		N/R		N/R													
5	*Cadmium	0.2	U	0.1	U	0.4	U	0.4	U												
5000	Calcium	N/R		N/R		N/R		N/R													
10	*Chromium																				
50	Cobalt	N/R		N/R		N/R		N/R													
25	Copper	53.0	U	60.0		92.0	U	90.0	U												
100	Iron	N/R		N/R		N/R		N/R													
3	*Lead	N/R		N/R		N/R		N/R													
5000	Magnesium	N/R		N/R		N/R		N/R													
15	Manganese	N/R		N/R		N/R		N/R													
0.2	Mercury	N/R		N/R		N/R		N/R													
40	*Nickel	N/R		N/R		N/R		N/R													
5000	Potassium	N/R		N/R		N/R		N/R													
5	Selenium	N/R		N/R		N/R		N/R													
10	Silver	N/R		N/R		N/R		N/R													
5000	Sodium	N/R		N/R		N/R		N/R													
10	Thallium	N/R		N/R		N/R		N/R													
50	Vanadium	N/R		N/R		N/R		N/R													
20	Zinc	9.0	U	5.0	U	17.0	U	19.0	U												
10	*Cyanide	N/R		N/R		N/R		N/R													

\*Action Level Exists

N/R = Not Required



## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

0004-5

b Name: PACE\_INCORPORATED Contract: EPC

b Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 3150.3

Level (low/med): LOW

Date Received: 05/03/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	0.2 0.16	B	U	F
7440-70-2	Calcium				NR
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper	53.0		U	P
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc	9.0	B	U	P
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

THIS SAMPLE WAS ANALYZED AS A DISSOLVED METAL.

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

A-4FB

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: 00016

Matrix (soil/water): WATER

Lab Sample ID: 3153.8

Level (low/med): LOW

Date Received: 05/03/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	0.1 0.080	B	U	F
7440-70-2	Calcium				NR
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper	60.0			P
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc	5.0	B	U	P
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

THIS SAMPLE WAS ANALYZED AS A DISSOLVED METAL.

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

A5R7-10

Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: 00018

Matrix (soil/water): WATER

Lab Sample ID: 3154.6

Level (low/med): LOW

Date Received: 05/03/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	0.4 0.41	B	U	F
7440-70-2	Calcium				NR
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper	92.0		U	P
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc	17.0	B	U	P
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

THIS SAMPLE WAS ANALYZED AS A DISSOLVED METAL.

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

A6R1-6

b Name: PACE\_INCORPORATED Contract: EPC

b Code: Case No.: SAS No.: SDG No.: 00017

Matrix (soil/water): WATER

Lab Sample ID: 3155.4

Level (low/med): LOW

Date Received: 05/03/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	0.4 0.44	B	U	F
7440-70-2	Calcium				NR
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper	90.0		U	P
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc	19.0	B	U	P
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

THIS SAMPLE WAS ANALYZED AS A DISSOLVED METAL.

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/2/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Data quality for this sample delivery group was excellent. Detection limits for aromatic compounds were qualified as estimated in all samples except S1-5 TB. These samples were apparently shipped via overnight courier; however, this information was not provided on the chain of custody forms.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Five samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 2, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-5	3113	05/02/91
S1-5 DUP	3117	05/02/91
S1-5 TB	3119	05/02/91

The title page for the data package states that the samples were collected on 5/3/91 rather than 5/2/91. The data validator has corrected the title page; a corrected copy is included with this report.

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



## **I. Holding Times**

Sample S1-5 TB was analyzed within the 7-day holding for nonpreserved samples. All other samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimates for all three samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### **A. Initial**

Initial calibration criteria were met on 4/24/91 (Instrument J).

### **B. Continuing**

Continuing calibration criteria were met on 5/8/91 with the exception of the % difference for 2-butanone (actual 31.7; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/13/91 with the exception of the % difference for 2-butanone (actual 32.4; criteria 25). Data were not affected.

## **IV. Blanks**

Methylene chloride was reported in the Method Blank VBLK1 and the trip blank. Acetone was reported in Method Blank VBLK2. Methylene chloride in the trip blank and acetone in Sample S1-5 were qualified as less than the reported values.

## **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S1-5. Data were within acceptance criteria.

#### **VII. Field Duplicates**

Compounds and concentrations (ug/L) reported in Samples S1-5 and S1-5 DUP were as follows:

Compound	S1-5	S1-5 DUP
Trichloroethene	14	
Tetrachloroethene	690	750

Because trichloroethene was found in only one of the duplicate samples, the value reported for trichloroethene in Sample S1-5 was rejected. Other data were within acceptance criteria.

#### **VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

#### **IX. TCL Compound Identification**

TCL compound identifications were acceptable.

#### **X. Compound Quantitation and Reported Detection Limits**

Results and detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were reported for this SDG.

#### **XII. System Performance**

System performance requires attention. Manual integrations should be addressed. All but one sample exceeded the required holding time.

### XIII. Overall Assessment of Data for a Case

Data quality for this sample delivery group was excellent. Detection limits for aromatic compounds were estimated in all samples except S1-5 TB. Methylene chloride in the trip blank and acetone in Sample S1-S were qualified as less than the reported values. Trichloroethane was rejected in Sample S1-5.

TITLE PAGE  
Analytical Data Report Package  
for  
ENVIRONMENTAL PROJECT CONTROL, INC.

00001

FIELD SAMPLE	LABORATORY SAMPLE	SAMPLE LOCATION	DATE & TIME OF SAMPLE COLLECTION
B1-5	95 003113.9	UNIFIRST	5/2/91 05/03/91 N/A
B1-5 MS	95 003115.5	UNIFIRST	5/2/91 05/03/91 N/A
B1-5 MSD	95 003116.3	UNIFIRST	5/2/91 05/03/91 N/A
B1-5 DUP	95 003117.1	UNIFIRST	5/2/91 05/03/91 N/A
B1-5 TB	95 003119.8	UNIFIRST	5/2/91 05/03/91 N/A

E.L.S. 6/28/91

DATE REPORTED  
LAB NAME

CERTIFICATION NO.

SUPERVISOR/MANAGER SIGNATURE

NAME

6/19/91

PACE INC.

NY 11119 NJ 73460  
CT PH-0498 KS E-168/1145  
MA NY057

ROBERT M. SCHULTE

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-5

Lab Code: PACE

Case No.: EPC

SAS No.:

SDS No. 00024

Matrix: (soil/water) WATER

Lab Sample ID: 3113.9

13  
6/19/91

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2569

Level: (low/med) LOW

Date Received: 5/ 3/91

Moisture: not dec.100.

Date Analyzed: 5/13/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L 0

74-87-3-----	Chloromethane	50.	U
74-83-9-----	Bromomethane	50.	U
75-01-4-----	Vinyl Chloride	50.	U
75-00-3-----	Chloroethane	50.	U
75-09-2-----	Methylene Chloride	25.	U
67-64-1-----	Acetone	22.	U
75-15-0-----	Carbon Disulfide	25.	U
75-35-4-----	1,1-Dichloroethene	25.	U
75-34-3-----	1,1-Dichloroethane	25.	U
540-59-0-----	1,2-Dichloroethene (total)	25.	U
67-66-3-----	Chloroform	25.	U
107-06-2-----	1,2-Dichloroethane	25.	U
78-93-3-----	2-Butanone	50.	U
71-55-6-----	1,1,1-Trichloroethane	25.	U
56-23-5-----	Carbon Tetrachloride	25.	U
108-05-4-----	Vinyl Acetate	50.	U
75-27-4-----	Bromodichloromethane	25.	U
78-87-5-----	1,2-Dichloropropane	25.	U
10061-01-5-----	cis-1,3-Dichloropropene	25.	U
79-01-6-----	Trichloroethene	14.	U
124-48-1-----	Dibromochloromethane	25.	U
79-00-5-----	1,1,2-Trichloroethane	25.	U
71-43-2-----	Benzene	25.	U
10061-02-6-----	Trans-1,3-Dichloropropene	25.	U
75-25-2-----	Bromoform	25.	U
108-10-1-----	4-Methyl-2-Pentanone	50.	U
591-78-6-----	2-Hexanone	50.	U
127-18-4-----	Tetrachloroethene	690.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	25.	U
108-88-3-----	Toluene	25.	U
108-90-7-----	Chlorobenzene	25.	U
100-41-4-----	Ethylbenzene	25.	U
100-42-5-----	Styrene	25.	U
1330-20-7-----	Xylene (total)	25.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-5

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00025

Matrix: (soil/water) WATER

Lab Sample ID: 3113.9

6/13/91

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2569

Level: (low/med) LOW

Date Received: 5/ 3/91

% Moisture: not dec.100.

Date Analyzed: 5/13/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

ETA SAMPLE NO.

Lab Name: PACE

Contract:

31-501P

Lab Code: PACE

Case No.: EPC

SAS No.:

SIS No.: 00032

Matrix: (soil/water) WATER

Lab Sample ID: 3117 #

6/14/91

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J0570

Level: (low/med) LOW

Date Received: 5/ 3/91

% Moisture: not dec.100.

Date Analyzed: 5/13/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) 315/1	Q
74-87-3	-----Chloromethane	50.	W
74-83-9	-----Bromomethane	50.	W
75-01-4	-----Vinyl Chloride	50.	W
75-00-3	-----Chloroethane	50.	W
75-09-2	-----Methylene Chloride	50.	W
67-64-1	-----Acetone	50.	W
75-15-0	-----Carbon Disulfide	50.	W
75-35-4	-----1,1-Dichloroethene	50.	W
75-34-3	-----1,1-Dichloroethane	50.	W
540-59-0	-----1,2-Dichloroethene (total)	50.	W
67-66-3	-----Chloroform	50.	W
107-06-2	-----1,2-Dichloroethane	50.	W
78-93-3	-----2-Butanone	50.	W
71-55-6	-----1,1,1-Trichloroethane	50.	W
56-23-5	-----Carbon Tetrachloride	50.	W
108-05-4	-----Vinyl Acetate	50.	W
75-27-4	-----Bromodichloromethane	50.	W
78-87-5	-----1,2-Dichloropropane	50.	W
10061-01-5	-----cis-1,3-Dichloropropene	50.	W
79-01-6	-----Trichloroethene	50.	W
124-48-1	-----Dibromochloromethane	50.	W
79-00-5	-----1,1,2-Trichloroethane	50.	W
71-43-2	-----Benzene	50.	W J
10061-02-6	-----Trans-1,3-Dichloropropene	50.	W
75-25-2	-----Bromoform	50.	W
108-10-1	-----4-Methyl-2-Pentanone	50.	W
591-78-6	-----2-Hexanone	50.	W
127-18-4	-----Tetrachloroethene	750.	W
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	W
108-88-3	-----Toluene	50.	W J
108-90-7	-----Chlorobenzene	50.	W J
100-41-4	-----Ethylbenzene	50.	W J
100-42-5	-----Styrene	50.	W J
1330-20-7	-----Xylene (total)	50.	W J

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-5DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00033

Matrix: (soil/water) WATER

Lab Sample ID: 3117.1 6/19/91

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2572

Level: (low/med) LOW

Date Received: 5/ 3/91

% Moisture: not dec.100.

Date Analyzed: 5/13/91

Column: (pack/cap) PAC

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-5TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00038

Matrix: (soil/water) WATER

Lab Sample ID: 3119.8

MS  
6/19/91

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2494

Level: (low/med) LOW

Date Received: 5/ 3/91

% Moisture: not dec.100.

Date Analyzed: 5/ 8/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	3.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-5TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00039  
6/19/91

Matrix: (soil/water) WATER

Lab Sample ID: 3119.8

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2494

Level: (low/med) LOW

Date Received: 5/ 3/91

% Moisture: not dec.100.

Date Analyzed: 5/ 8/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 05/02/91

Chemical Analyses Performed By

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

No valid target compounds were detected. All non-detects were qualified as estimates due to the manual integration of areas for all three internal standards and the majority of the target compounds. Documentation to support these manual integrations has been requested from the laboratory. When received the data will be re-evaluated.

No data was provided for sample S4-3. The sample was not analyzed by Method 524.2.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sampling quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

Data Validation for  
Environmental Project Control, Inc.

Samples Collected May 2, 1991

Volatiles Analyses Data

Method 524.2 Analyses

**Case Narrative**

Eight treatment system samples were collected May 2, 1991 and submitted to Pace, Inc. May 3, 1991. The laboratory was requested to perform purgeable volatile analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  range may adversely affect the more volatile compounds.

No valid target compounds were detected. 1,1,1-trichloroethane was reported at 3 ppb in sample S5-3 but was not detected in the reanalysis of this sample. The result in the original analysis was rejected. All non-detects have been qualified as estimates due to manual integration of internal standard and target compound areas. No data were provided for sample S4-3 because the sample was not analyzed by Method 524.2.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3118	S1-5FB	05/02/91
3121	S6-5	05/02/91
3123	S6-5MS	05/02/91
3124	S6-5MSD	05/02/91
3125	S6-5DUP	05/02/91
3127	S6-5TB	05/02/91
3128	S2-3	05/02/91
3129	S3-3	05/02/91
3130	S4-3	05/02/91
3131	S5-3	05/02/91

The areas reviewed during validation are listed below.

## ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment of Data for a Case

## DATA VALIDATION

### I. Sample Holding Times

All samples were analyzed outside the 7-day holding time for non-preserved samples but within the 14-day holding time for aqueous volatile samples. Detection limits for aromatic compounds were qualified as estimates for all samples.

### II. Instrument Performance

Inst. F met bromofluorobenzene (BFB) ion abundance criteria on 05/11/91 1632, 05/14/91 2304, and 05/15/91 1354.

### III. Calibration

The areas for all internal standards and most of the target compounds were manually integrated. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. This validation has been completed on the assumption that the manual integrations as done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all affected compounds for the associated samples have been qualified as estimates.

#### Initial Calibration 05/12/91 Inst F

All compounds met the 0.10 response factor criteria established for this project.

All compounds met the 30% relative standard deviation (%RSD) criteria.

Continuing Calibration 05/14/91 2338 on Inst. F met criteria with the exceptions of bromodichloromethane (28%) and trans-1,3-dichloropropene (31%). These compounds were not detected and no data were qualified.

Continuing Calibration 05/15/91 1446 on Inst. F met criteria with the exception of trans-1,3-dichloropropene (46%). This compound was not detected and no data have been qualified.

#### **IV. Blanks**

No target compounds were detected in the two method blanks, the trip blank or the field blank.

#### **V. Surrogate Recovery**

All surrogate recoveries were within control limits with the exception of toluene-d8 in Sample S6-5MS, bromo- fluorobenzene in Samples S5-3 and S6-5MS and 1,2-dichloroethane-d4 in Sample S5-3RE. Surrogate recoveries were within control limits in the original analysis and the MSD analysis of S6-5. Different surrogates were outside control limits on sample S5-3 in the original analysis and the re-analysis. No target compounds were detected and no data have been qualified.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

All matrix spike recoveries are within the established advisory limits.

The Relative Percent Difference (RPD) between matrix spike (MS) and matrix spike duplicate (MSD) recoveries are within the established advisory limits.

#### **VII. Field Quality Control Samples**

Sample S6-5 and S6-5Dup were submitted as duplicate samples. No target compounds were detected in either sample.

No target compounds were detected in the field or trip Blanks.

#### **VIII. Internal Standards Performance**

All retention times (RT) and internal standard (IS) areas are acceptable.

#### **IX. TCL Compound Identification**

No valid compounds were detected.



**X. Compound Quantitation and Reported Detection Limits**

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined by the PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined by the PQL study are as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
vinyl chloride	0.48
chloroethane	0.49
methylene chloride	4.41
1,1-dichloroethene	0.67
1,1-dichloroethane	0.54
trans-1,2-dichloroethene	0.50
chloroform	0.53
1,2-dichloroethane	0.52
1,1,1-trichloroethane	0.44
carbon tetrachloride	0.43
bromodichloromethane	0.38
1,2-dichloropropane	0.45
cis-1,3-dichloropropene	0.33
trichloroethene	0.42
dibromochloromethane	0.33
1,1,2-trichloroethane	0.43
benzene	0.58
trans-1,3-dichloropropene	0.07
bromoform	0.49
tetrachloroethene	0.51
1,1,2,2-tetrachloroethane	0.44
toluene	0.45
chlorobenzene	0.44
ethylbenzene	0.51
m-xylene	0.48
o-, p-xylene	0.93
1,2-dichloroethane-d4	0.50
toluene-d8	0.45
bromofluorobenzene	0.36

The above MDLs should be applied to these data.

**XI. Tentatively Identified Compounds**

No TICs were detected in this sample delivery group.

## **XII. System Performance**

System performance was acceptable.

## **XIII. Overall Assessment of Data for a Case**

No valid target compounds were detected. All non-detects have been qualified as estimates due to manual integration of internal standard and target compound areas. No data were provided for Sample S4-3 because it was not analyzed by Method 524.2.

G &amp; H

PACE Project Number: 810503503 00029

PACE Sample Number: 95 0031180  
Date Collected: 05/02/91  
Date Received: 05/03/91  
Parameter Units MDL SI-5 FB

ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	u5
Chloroethane	ug/L	0.5	ND	u5
Methylene chloride	ug/L	0.5	ND	u5
1,1-Dichloroethene	ug/L	0.5	ND	u5
1,1-Dichloroethane	ug/L	0.5	ND	u5
trans-1,2-Dichloroethene	ug/L	0.5	ND	u5
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	u5
1,2-Dichloroethane	ug/L	0.5	ND	u5
1,1,1-Trichloroethane	ug/L	0.5	ND	u5
Carbon tetrachloride	ug/L	0.5	ND	u5
Bromodichloromethane	ug/L	0.5	ND	u5
1,2-Dichloropropane	ug/L	0.5	ND	u5
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	u5
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL Method Detection Limit  
ND Not detected at or above the MDL.

G &amp; H

PACE Project Number: 810503503 00033

PACE Sample Number:

95 0031210

Date Collected:

05/02/91

Date Received:

05/03/91

ParameterUnitsMDLS6-5ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND UJ
Chloroethane	ug/L	0.5	ND UJ
Methylene chloride	ug/L	0.5	ND UJ
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND UJ
cis-1,2-Dichloroethene	ug/L	0.5	ND UJ
Chloroform	ug/L	0.5	ND UJ
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND UJ
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND UJ
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND UJ

MDL Method Detection Limit

ND Not detected at or above the MDL.

G &amp; H

PACE Project Number: 810503503

00037

PACE Sample Number:

95 0031252

Date Collected:

05/02/91

Date Received:

05/03/91

ParameterUnitsMDLS6-5 DUPORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND <u>45</u>
Chloroethane	ug/L	0.5	ND <u>45</u>
Methylene chloride	ug/L	0.5	ND <u>45</u>
1,1-Dichloroethene	ug/L	0.5	ND <u>1</u>
1,1-Dichloroethane	ug/L	0.5	ND <u>1</u>
trans-1,2-Dichloroethene	ug/L	0.5	ND <u>1</u>
cis-1,2-Dichloroethene	ug/L	0.5	ND <u>45</u>
Chloroform	ug/L	0.5	ND <u>45</u>
1,2-Dichloroethane	ug/L	0.5	ND <u>1</u>
1,1,1-Trichloroethane	ug/L	0.5	ND <u>1</u>
Carbon tetrachloride	ug/L	0.5	ND <u>1</u>
Bromodichloromethane	ug/L	0.5	ND <u>1</u>
1,2-Dichloropropane	ug/L	0.5	ND <u>1</u>
cis-1,3-Dichloropropene	ug/L	0.5	ND <u>45</u>
Trichloroethene	ug/L	0.5	ND <u>1</u>
Dibromochloromethane	ug/L	0.5	ND <u>1</u>
1,1,2-Trichloroethane	ug/L	0.5	ND <u>1</u>
Benzene	ug/L	0.5	ND <u>1</u>
trans-1,3-Dichloropropene	ug/L	0.5	ND <u>1</u>
Bromoform	ug/L	0.5	ND <u>45</u>
Tetrachloroethene	ug/L	0.5	ND <u>1</u>
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND <u>1</u>
Toluene	ug/L	0.5	ND <u>1</u>
Chlorobenzene	ug/L	0.5	ND <u>1</u>
Ethyl benzene	ug/L	0.5	ND <u>1</u>
Xylene, total	ug/L	0.5	ND <u>45</u>

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

PACE Sample Number:

95 0031279

Date Collected:

05/02/91

Date Received:

05/03/91

ParameterUnitsMDLS6-5 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND u.s
Chloroethane	ug/L	0.5	ND u.s
Methylene chloride	ug/L	0.5	ND u.s
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND u.s
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND u.s
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND u.s
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND u.s
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND u.s
Xylene, total	ug/L	0.5	ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00045

G &amp; H

PACE Project Number: 810503503

PACE Sample Number:

95 0031287

Date Collected:

05/02/91

Date Received:

05/03/91

ParameterUnitsMDLS2-3ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND <i>u5</i>
Chloroethane	ug/L	0.5	ND <i>u5</i>
Methylene chloride	ug/L	0.5	ND <i>u5</i>
1,1-Dichloroethene	ug/L	0.5	ND <i>1</i>
1,1-Dichloroethane	ug/L	0.5	ND <i>1</i>
trans-1,2-Dichloroethene	ug/L	0.5	ND <i>u5</i>
cis-1,2-Dichloroethene	ug/L	0.5	ND <i>u5</i>
Chloroform	ug/L	0.5	ND <i>u5</i>
1,2-Dichloroethane	ug/L	0.5	ND <i>1</i>
1,1,1-Trichloroethane	ug/L	0.5	ND <i>1</i>
Carbon tetrachloride	ug/L	0.5	ND <i>1</i>
Bromodichloromethane	ug/L	0.5	ND <i>1</i>
1,2-Dichloropropane	ug/L	0.5	ND <i>u5</i>
cis-1,3-Dichloropropene	ug/L	0.5	ND <i>1</i>
Trichloroethene	ug/L	0.5	ND <i>1</i>
Dibromochloromethane	ug/L	0.5	ND <i>1</i>
1,1,2-Trichloroethane	ug/L	0.5	ND <i>1</i>
Benzene	ug/L	0.5	ND <i>1</i>
trans-1,3-Dichloropropene	ug/L	0.5	ND <i>u5</i>
Bromoform	ug/L	0.5	ND <i>1</i>
Tetrachloroethene	ug/L	0.5	ND <i>1</i>
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND <i>1</i>
Toluene	ug/L	0.5	ND <i>1</i>
Chlorobenzene	ug/L	0.5	ND <i>1</i>
Ethyl benzene	ug/L	0.5	ND <i>u5</i>
Xylene, total	ug/L	0.5	ND <i>1</i>

MDL Method Detection Limit

ND Not detected at or above the MDL.

G &amp; H

PACE Project Number: 810503503

00049

PACE Sample Number:

95 0031295

Date Collected:

05/02/91

Date Received:

05/03/91

ParameterUnitsMDLS3-3ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	US
Chloroethane	ug/L	0.5	ND	US
Methylene chloride	ug/L	0.5	ND	US
1,1-Dichloroethene	ug/L	0.5	ND	L
1,1-Dichloroethane	ug/L	0.5	ND	L
trans-1,2-Dichloroethene	ug/L	0.5	ND	US
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	US
1,2-Dichloroethane	ug/L	0.5	ND	L
1,1,1-Trichloroethane	ug/L	0.5	ND	L
Carbon tetrachloride	ug/L	0.5	ND	L
Bromodichloromethane	ug/L	0.5	ND	L
1,2-Dichloropropane	ug/L	0.5	ND	US
cis-1,3-Dichloropropene	ug/L	0.5	ND	L
Trichloroethene	ug/L	0.5	ND	L
Dibromochloromethane	ug/L	0.5	ND	L
1,1,2-Trichloroethane	ug/L	0.5	ND	L
Benzene	ug/L	0.5	ND	L
trans-1,3-Dichloropropene	ug/L	0.5	ND	US
Bromoform	ug/L	0.5	ND	L
Tetrachloroethene	ug/L	0.5	ND	L
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	L
Toluene	ug/L	0.5	ND	L
Chlorobenzene	ug/L	0.5	ND	L
Ethyl benzene	ug/L	0.5	ND	US
Xylene, total	ug/L	0.5	ND	L

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



G &amp; H

PACE Project Number: 810503503

00053

PACE Sample Number:

95 0031317

Date Collected:

05/02/91

Date Received:

05/03/91

ParameterUnitsMDLS5-3ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

vinyl chloride	ug/L	0.5	ND 0.5
Chloroethane	ug/L	0.5	ND 0.5
Methylene chloride	ug/L	0.5	ND 0.5
1,1-Dichloroethene	ug/L	0.5	ND 1
1,1-Dichloroethane	ug/L	0.5	ND 1
trans-1,2-Dichloroethene	ug/L	0.5	ND 0.5
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND 0.5
1,2-Dichloroethane	ug/L	0.5	ND 1
1,1,1-Trichloroethane	ug/L	0.5	3 5
Carbon tetrachloride	ug/L	0.5	ND 0.5
Bromodichloromethane	ug/L	0.5	ND 1
1,2-Dichloropropane	ug/L	0.5	ND 0.5
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND 1
trans-1,3-Dichloropropene	ug/L	0.5	ND 0.5
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND 1
Ethyl benzene	ug/L	0.5	ND 0.5
Xylene, total	ug/L	0.5	ND 1

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

DATA VALIDATION REPORT

FOR

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

SEMIVOLATILES ANALYSIS DATA  
Samples Collected May 2, 1991

Chemical Analyses Performed by:

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

No target or tentatively identified compounds were detected in any of the three samples in this Sample Delivery Group. Detection limits for 3,3'-dichlorobenzidine were rejected in S6-5 and S1-5 FB; the detection limit for 4-nitrophenol was rejected in S1-5. All analytes quantitated using IS#4 and IS#5 in S1-5, S6-5, and S1-5 FB were flagged as estimated; analytes quantitated using IS#4 in S1-5 FB were also estimated.

Numerous manual integrations were performed in the standards supporting the data in this SDG, including areas for internal standards and surrogates. Some manual areas, including at least one internal standard and two surrogates, were also noted in the sample analyses. None of the manual integrations was documented in the data package, and therefore could not be evaluated as part of this validation effort. Due to the large number of manually integrated internal standards, all results in this SDG should be used with caution until and unless documentation is provided by the laboratory for independent review.

Problems identified on the Chain of Custody (COC) records include: (1) 6 COC's are included although only 2 are pertinent to this data package; (2) there is no "Accepted by" signature for the first signature pair, and no "Relinquished by" signature for the second pair; (3) the two transfer signatures recorded do not include the affiliation of the persons involved; (4) multiple entries are made for the same sample using identical sample identifications but listing different collection times; (5) corrections are made incorrectly as "write-overs", and none are initialled or dated; and (6) separate entries should not be made for MS/MSD samples.

Validation of the data package is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying Form I's copied from the data package to qualify some of the results as appropriate based on the findings of the data review.

### Case Narrative

Five water samples (including separate samples for matrix spike/matrix spike duplicate) were collected on May 2, 1991 and received by Pace, Inc. on May 3, 1991. Analysis of semivolatile organic compounds according to EPA Contract Laboratory Program (CLP) Statement of Work 2/88 was performed.

The following samples are included in this Sample Delivery Group (SDG):

<u>Client ID</u>	<u>Lab ID</u>	<u>Collection Date</u>
S1-5	3114	5/02/91
S1-5 FB	3118	5/02/91
S6-5	3122	5/02/91

Semivolatiles analysis results for these samples were reported by the laboratory under Project Number 810503.503.

## Semivolatiles

The areas reviewed during the semivolatiles validation procedure are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## I. Holding Times

All samples were extracted and analyzed within the established holding times.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria. The entries on Form V for the decafluorotriphenylphosphine (DFTPP) run on 6/9/91 do not match the raw data; a corrected copy of this Form V is attached to this validation report. The correct abundances are within criteria; no data are affected.

## III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be done as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. In many cases, areas for internal standard (IS) and/or surrogate peaks have also been manually integrated; these must be documented in the data package due to the potential effect on quantitative results. Where an IS is manually integrated in any associated standard(s), all analytes quantitated using that IS are estimated in the samples until and unless documentation of the manually integrated area is provided for review.

### A. Initial

The method blank, SBLK1, associated with this SDG was analyzed under an initial calibration (IC) run on 6/9-10/91. All criteria were met in this calibration with the exception of the Percent Relative Standard Deviations (%RSD) for 4-chloroaniline (33.2), benzoic acid (39.3), 1,2,4-trichlorobenzene (30.6), 3-nitroaniline (32.3), 3,3'-dichlorobenzidine (37.4), and 2-fluorobiphenyl (Surrogate-31.8). No qualifiers are applied on this basis, however it is noted that many manual areas were integrated in the standards making up this IC, including the following internal standard and surrogate peaks:

IS#1 (d4-1,4-dichlorobenzene) - 20, 50, 80, 120, 160 ppb stds  
IS#2 (d8-naphthalene) - 120, 160 ppb standards  
S#4 (d6-phenol) - 50 ppb standard  
S#6 (2,4,6-tribromophenol) - 50 ppb standard

Documentation of manual integrations should be provided for all analytes, but is especially crucial when IS and surrogate peaks are

quantitated this way. The observed areas for IS#1 appear to be particularly variable, ranging from 45651 to 87215 area counts, all of which were generated manually. No qualifiers are applied since only the method blank was analyzed under this IC and no field sample data are directly affected.

Samples S1-5, S1-5 FB, and S6-5 were analyzed under an initial calibration (IC) performed on 6/11/91. All criteria were met in this calibration with the exception of the (%RSD) for 4-chloroaniline (36.2), hexachlorocyclopentadiene (34.3), 2,4,5-trichlorophenol (34.3), 2,6-dinitrotoluene (34.3), 4-nitroaniline (30.5), and 3,3'-dichlorobenzidine (45.0). No data are affected. Manual integrations are again noted for the following IS and surrogate peaks:

- IS#1 (d4-1,4-dichlorobenzene) - 120, 160 ppb standards
- IS#2 (d8-naphthalene) - 50, 120, 160 ppb stds, and CC std
- IS#4 (d10-phenanthrene) - 160 ppb standard
- IS#6 (d12-perylene) - 120 ppb standard
- S2 (2-fluorobiphenyl) - 80, 160 ppb standards
- S6 (2,4,6-tribromophenol) - 80 ppb std and CC standard

All analytes quantitated using IS#1, #2, #4, and #6 in Samples S1-5, S1-5 FB, and S6-5 are flagged as estimated until and unless documentation of the manual integrations used to establish the calibrations is provided for review.

#### B. Continuing

SBLK1 was run immediately following the 6/9-10 IC, with no separate continuing calibration (CC) standard. This is an accepted practice; no data are affected.

Sample S1-5 and its MS/MSD were run immediately following the 6/11 IC with no separate CC standard. No data are affected.

Samples S6-5 and S1-5 FB were also run under a CC standard on 6/12/91. Criteria were met for this calibration with the exception of the Response Factor (RF) for 3,3'-dichlorobenzidine (0.048, criterion 0.050), and %D for benzoic acid (31.8), 2,4,5-trichlorophenol (28.5), and 3,3'-dichlorobenzidine (26.0). Detection limits for 3,3'-dichlorobenzidine are rejected in S6-5 and S1-5 FB due to the low RF, indicating poor sensitivity to this compound. No other data are affected.

#### IV. Blanks

No target or tentatively identified compounds were reported in SBLK1, extracted 5/8 and analyzed 6/10.



No target or tentatively identified compounds were detected in the field blank, S1-5 FB, extracted 5/8 and analyzed 6/12.

#### **V. Surrogate Recovery**

Recovery of nitrobenzene-d5 was low (31%) in S1-5 FB (QC limits 35-114%). This surrogate was quantitated using an undocumented manual area in this sample. All other surrogate recoveries were within established acceptance criteria. No qualifiers are applied.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample S1-5. Percent Recovery (%R) was low for 4-nitrophenol in both the MS and the MSD, at 4% and 8%, respectively (QC limits 10-80%); the Relative Percent Difference (RPD) for this spike compound was also outside the QC limit of 50%, at 54%. The detection limit for 4-nitrophenol in the unspiked sample S1-5 is rejected; no other data are affected.

#### **VII. Field Duplicates**

No field duplicate pair was included with this SDG.

#### **VIII. Internal Standards Performance**

Areas for IS#5 and IS#6 in Sample S1-5 were below the minimum acceptable limits; quantitation limits for all analytes quantitated using these IS's are estimated. In addition, areas for IS#5 and IS#6 were just above the minimum limits in S6-5 and S1-5 FB; in the latter sample, IS#4 was also very low, though still just within the minimum limit. Due to the consistency of the responses for all the samples in this SDG, the detection limits for analytes quantitated using IS#5 and #6 are also estimated in S1-5 FB and S6-5; in S1-5 FB, those analytes quantitated using IS#4 are also estimated.

The Case Narrative included with the data package incorrectly states that all internal standards were within specification for the semivolatile fraction. No re-analyses of these samples were performed.

#### **IX. TCL Compound Identification**

Compound identifications are properly reported and documented in all cases.

#### **X. Compound Quantitation and Reported Detection Limits**

Results and quantitation limits are correctly reported; no dilutions were performed in this SDG.

#### **XI. Tentatively Identified Compounds**

No TIC's were identified or reported in this SDG.

#### **XII. System Performance**

The extensive use of manual peak area integration in the standards supporting this SDG suggests either a problem with the software or poor chromatography-specifically, a lack of resolution between the peaks. The latter appears to be at least partly the case: chromatograms for blanks and samples show d6-phenol and d4-1,4-dichlorobenzene to be just barely baseline resolved, and these compounds consistently required manual integration. Further, the drop in area responses for the later-eluting internal standards can also be indicative of a column problem, and should be investigated by the laboratory. Re-analysis of the affected samples was not performed, therefore the observed low areas cannot be attributed to a matrix problem. Ideally, re-analysis on a different column (or instrument) should have been performed.

#### **XIII. Overall Assessment**

Sample results should be used with caution due to the large number of manual integrations used by the laboratory, until and unless documentation of these integrations is provided for review. The following qualifiers are also applied:

1. Detection limits for 3,3'-dichlorobenzidine are rejected in Samples S6-5 and S1-5 FB due to a low RF in the continuing calibration standard.

2. The detection limit for 4-nitrophenol is rejected in Sample S1-5 due to its recovery at less than 10% in the MS/MSD for this sample; no other samples were analyzed on the same day, therefore no other samples are similarly qualified.

3. Non-detects for all analytes quantitated using IS#5 and IS#6 are flagged as estimated (UJ) in Samples S1-5, S1-5 FB, and S6-5 due to the areas for these IS's dropping to below or just above the minimum acceptable area in each case. Analytes quantitated using IS#4 are similarly qualified in S1-5 FB.

4. Results for all analytes quantitated using IS#1, #2, #4, and #6 in all three samples in this SDG are flagged as estimated pending documentation of manual integrations being made available for review.

Incomplete, unclear, or inaccurate Chain of Custody (COC) records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the COC records included in this data package:

1. More custody records are included than are pertinent to this package; this could cause confusion as to the disposition of the rest of the data requested on the COC's.

2. Transfer signatures are incomplete: no "Accepted by" signature is present for the first signature pair, and no "Relinquished by" signature is present for the second pair; neither of the signatures that is present include the affiliation of the person involved.

3. Several corrections (cross-outs and write-overs) are made on the forms; none are initialled or dated.

4. Multiple entries for the same sample(s) are confusing, especially when the sample identifications are exactly the same and the time of collection changes. This actually implies that different samples are being analyzed for the different parameters listed, even though they are given the same identification. How the data will ultimately be used should be carefully considered when planning and documenting sample collection events.

5. MS/MSD analyses are a laboratory-initiated quality control activity; there should not be separate samples on the COC identified as "MS" and "MSD".

Manually integrated areas should be documented in the data package to allow review of the integration method used and to confirm that the integration was consistent in both standards and samples, where applicable. This is especially important when areas for internal standards and/or surrogates are involved, as the quantitation of multiple target analyte results is directly affected when a single IS area is manually integrated.

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SA SAMPLE NO.

S1-00023

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3114.7

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2641

Level: (low/med) LOW

Date Received: 5/ 3/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/ 8/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/11/91

PC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

108-95-2-----	Phenol	10.	U
111-44-4-----	bis(2-Chloroethyl)ether	10.	U
95-57-8-----	2-Chlorophenol	10.	U
541-73-1-----	1,3-Dichlorobenzene	10.	U
106-46-7-----	1,4-Dichlorobenzene	10.	U
100-51-6-----	Benzyl alcohol	10.	U
95-50-1-----	1,2-Dichlorobenzene	10.	U
95-48-7-----	2-Methylphenol	10.	U
108-60-1-----	bis(2-Chloroisopropyl)ether	10.	U
106-44-5-----	4-Methylphenol	10.	U
621-64-7-----	N-Nitroso-di-n-propylamine	10.	U
67-72-1-----	Hexachloroethane	10.	U
98-95-3-----	Nitrobenzene	10.	U
78-59-1-----	Isophorone	10.	U
88-75-5-----	2-Nitrophenol	10.	U
105-67-9-----	2,4-Dimethylphenol	10.	U
65-85-0-----	Benzoic acid	50.	U
111-91-1-----	bis(2-Chloroethoxy)methane	10.	U
120-83-2-----	2,4-Dichlorophenol	10.	U
120-82-1-----	1,2,4-Trichlorobenzene	10.	U
91-20-3-----	Naphthalene	10.	U
106-47-8-----	4-Chloroaniline	10.	U
87-68-3-----	Hexachlorobutadiene	10.	U
59-50-7-----	4-Chloro-3-methylphenol	10.	U
91-57-6-----	2-Methylnaphthalene	10.	U
77-47-4-----	Hexachlorocyclopentadiene	10.	U
88-06-2-----	2,4,6-Trichlorophenol	10.	U
95-95-4-----	2,4,5-Trichlorophenol	50.	U
91-58-7-----	2-Chloronaphthalene	10.	U
88-74-4-----	2-Nitroaniline	50.	U
131-11-3-----	Dimethylphthalate	10.	U
208-96-8-----	Acenaphthylene	10.	U
606-20-2-----	2,6-Dinitrotoluene	10.	U

CENKSON 7/8/91

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

81-5  
00024

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3114.7

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2641

Level: (low/med) LOW

Date Received: 5/ 3/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/ 8/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/11/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

99-09-2-----	3-Nitroaniline	50.	U
83-32-9-----	Acenaphthene	10.	U
51-28-5-----	2,4-Dinitrophenol	50.	U
100-02-7-----	4-Nitrophenol	50.	U
132-64-9-----	Dibenzofuran	10.	U
121-14-2-----	2,4-Dinitrotoluene	10.	U
84-66-2-----	Diethylphthalate	10.	U
7005-72-3-----	4-Chlorophenyl-phenylether	10.	U
86-73-7-----	Fluorene	10.	U
100-01-6-----	4-Nitroaniline	50.	U
534-52-1-----	4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----	N-Nitrosodiphenylamine	10.	U
101-55-3-----	4-Bromophenyl-phenylether	10.	U
118-74-1-----	Hexachlorobenzene	10.	U
87-86-5-----	Pentachlorophenol	50.	U
85-01-8-----	Phenanthrene	10.	U
120-12-7-----	Anthracene	10.	U
84-74-2-----	Di-n-butylphthalate	10.	U
206-44-0-----	Fluoranthene	10.	U
129-00-0-----	Pyrene	10.	U
85-68-7-----	Butylbenzylphthalate	10.	U
91-94-1-----	3,3'-Dichlorobenzidine	20.	U
56-55-3-----	Benzo(a)anthracene	10.	U
218-01-9-----	Chrysene	10.	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----	Di-n-octylphthalate	10.	U
205-99-2-----	Benzo(b)fluoranthene	10.	U
207-08-9-----	Benzo(k)fluoranthene	10.	U
50-32-8-----	Benzo(a)pyrene	10.	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----	Dibenzo(a,h)anthracene	10.	U
191-24-2-----	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

FORM I SV-2

1/87 Rev.

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
RELATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

81-5

00025

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3114.7

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2641

Level: (low/med) LOW

Date Received: 5/ 3/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/ 8/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/11/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO.

8175 FB 9

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3118.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2653

Level: (low/med) LOW

Date Received: 5/ 3/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/ 8/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

IPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

108-95-2-----Phenol	10.	U
111-44-4-----bis(2-Chloroethyl)ether	10.	U
95-57-8-----2-Chlorophenol	10.	U
541-73-1-----1,3-Dichlorobenzene	10.	U
106-46-7-----1,4-Dichlorobenzene	10.	U
100-51-6-----Benzyl alcohol	10.	U
95-50-1-----1,2-Dichlorobenzene	10.	U
95-48-7-----2-Methylphenol	10.	U
108-60-1-----bis(2-Chloroisopropyl)ether	10.	U
106-44-5-----4-Methylphenol	10.	U
621-64-7-----N-Nitroso-di-n-propylamine	10.	U
67-72-1-----Hexachloroethane	10.	U
98-95-3-----Nitrobenzene	10.	U
78-59-1-----Isophorone	10.	U
88-75-5-----2-Nitrophenol	10.	U
105-67-9-----2,4-Dimethylphenol	10.	U
65-85-0-----Benzoic acid	50.	U
111-91-1-----bis(2-Chloroethoxy)methane	10.	U
120-83-2-----2,4-Dichlorophenol	10.	U
120-82-1-----1,2,4-Trichlorobenzene	10.	U
91-20-3-----Naphthalene	10.	U
106-47-8-----4-Chloroaniline	10.	U
87-68-3-----Hexachlorobutadiene	10.	U
59-50-7-----4-Chloro-3-methylphenol	10.	U
91-57-6-----2-Methylnaphthalene	10.	U
77-47-4-----Hexachlorocyclopentadiene	10.	U
88-06-2-----2,4,6-Trichlorophenol	10.	U
95-95-4-----2,4,5-Trichlorophenol	50.	U
91-58-7-----2-Chloronaphthalene	10.	U
88-74-4-----2-Nitroaniline	50.	U
131-11-3-----Dimethylphthalate	10.	U
208-96-8-----Acenaphthylene	10.	U
606-20-2-----2,6-Dinitrotoluene	10.	U

OASUKSON 7/8/91

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-5 FB

00030

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3118.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2653

Level: (low/med) LOW

Date Received: 5/ 3/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/ 8/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

99-09-2-----	3-Nitroaniline	50.	U
83-32-9-----	Acenaphthene	10.	U
51-28-5-----	2,4-Dinitrophenol	50.	U
100-02-7-----	4-Nitrophenol	50.	U
132-64-9-----	Dibenzofuran	10.	U
121-14-2-----	2,4-Dinitrotoluene	10.	U
84-66-2-----	Diethylphthalate	10.	U
7005-72-3-----	4-Chlorophenyl-phenylether	10.	U
86-73-7-----	Fluorene	10.	U
100-01-6-----	4-Nitroaniline	50.	U
534-52-1-----	4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----	N-Nitrosodiphenylamine	10.	U
101-55-3-----	4-Bromophenyl-phenylether	10.	U
118-74-1-----	Hexachlorobenzene	10.	U
87-86-5-----	Pentachlorophenol	50.	U
85-01-8-----	Phenanthrene	10.	U
120-12-7-----	Anthracene	10.	U
84-74-2-----	Di-n-butylphthalate	10.	U
206-44-0-----	Fluoranthene	10.	U
129-00-0-----	Pyrene	10.	U
85-68-7-----	Butylbenzylphthalate	10.	U
91-94-1-----	3,3'-Dichlorobenzidine	20.	U
56-55-3-----	Benzo(a)anthracene	10.	U
218-01-9-----	Chrysene	10.	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----	Di-n-octylphthalate	10.	U
205-99-2-----	Benzo(b)fluoranthene	10.	U
207-08-9-----	Benzo(k)fluoranthene	10.	U
50-32-8-----	Benzo(a)pyrene	10.	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----	Dibenzo(a,h)anthracene	10.	U
191-24-2-----	Benzo(g,h,i)perylene	10.	U

7/8/91 ca. 1000

70

(1) - Cannot be separated from diphenylamine

FORM I SV-2

1/87 Rev.



1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TEMPORARILY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-5 FB

00001

Lab Name: PACE Contract:  
Lab Code: PACE Case No.: EPC SAS No.: SDG No.:  
Matrix: (soil/water) WATER Lab Sample ID: 3118.0  
Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2653  
Level: (low/med) LOW Date Received: 5/ 3/91  
Moisture: not dec.100. dec. 0. Date Extracted: 5/ 8/91  
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91  
PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 0 CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

Lab Name: PACE

Contract:

86-5  
00015

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3122.8

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2650

Level: (low/med) LOW

Date Received: 5/ 3/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/ 8/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

EPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

108-95-2-----Phenol	10.	U
111-44-4-----bis(2-Chloroethyl)ether	10.	U
95-57-8-----2-Chlorophenol	10.	U
541-73-1-----1,3-Dichlorobenzene	10.	U
106-46-7-----1,4-Dichlorobenzene	10.	U
100-51-6-----Benzyl alcohol	10.	U
95-50-1-----1,2-Dichlorobenzene	10.	U
95-48-7-----2-Methylphenol	10.	U
108-60-1-----bis(2-Chloroisopropyl)ether	10.	U
106-44-5-----4-Methylphenol	10.	U
621-64-7-----N-Nitroso-di-n-propylamine	10.	U
67-72-1-----Hexachloroethane	10.	U
98-95-3-----Nitrobenzene	10.	U
78-59-1-----Isophorone	10.	U
88-75-5-----2-Nitrophenol	10.	U
105-67-9-----2,4-Dimethylphenol	10.	U
65-85-0-----Benzoic acid	50.	U
111-91-1-----bis(2-Chloroethoxy)methane	10.	U
120-83-2-----2,4-Dichlorophenol	10.	U
120-82-1-----1,2,4-Trichlorobenzene	10.	U
91-20-3-----Naphthalene	10.	U
106-47-8-----4-Chloroaniline	10.	U
87-68-3-----Hexachlorobutadiene	10.	U
59-50-7-----4-Chloro-3-methylphenol	10.	U
91-57-6-----2-Methylnaphthalene	10.	U
77-47-4-----Hexachlorocyclopentadiene	10.	U
88-06-2-----2,4,6-Trichlorophenol	10.	U
95-95-4-----2,4,5-Trichlorophenol	50.	U
91-58-7-----2-Chloronaphthalene	10.	U
88-74-4-----2-Nitroaniline	50.	U
131-11-3-----Dimethylphthalate	10.	U
208-96-8-----Acenaphthylene	10.	U
606-20-2-----2,6-Dinitrotoluene	10.	U

analysis 7/8/91

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

86-5

00016

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3122.8

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2650

Level: (low/med) LOW

Date Received: 5/ 3/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/ 8/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

99-09-2-----3-Nitroaniline	50.	U
83-32-9-----Acenaphthene	10.	U
51-28-5-----2,4-Dinitrophenol	50.	U
100-02-7-----4-Nitrophenol	50.	U
132-64-9-----Dibenzofuran	10.	U
121-14-2-----2,4-Dinitrotoluene	10.	U
84-66-2-----Diethylphthalate	10.	U
7005-72-3-----4-Chlorophenyl-phenylether	10.	U
86-73-7-----Fluorene	10.	U
100-01-6-----4-Nitroaniline	50.	U
534-52-1-----4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----N-Nitrosodiphenylamine	10.	U
101-55-3-----4-Bromophenyl-phenylether	10.	U
118-74-1-----Hexachlorobenzene	10.	U
87-86-5-----Pentachlorophenol	50.	U
85-01-8-----Phenanthrene	10.	U
120-12-7-----Anthracene	10.	U
84-74-2-----Di-n-butylphthalate	10.	U
206-44-0-----Fluoranthene	10.	U
129-00-0-----Pyrene	10.	U
85-68-7-----Butylbenzylphthalate	10.	U
91-94-1-----3,3'-Dichlorobenzidine	20.	U
56-55-3-----Benzo(a)anthracene	10.	U
218-01-9-----Chrysene	10.	U
117-81-7-----bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----Di-n-octylphthalate	10.	U
205-99-2-----Benzo(b)fluoranthene	10.	U
207-08-9-----Benzo(k)fluoranthene	10.	U
50-32-8-----Benzo(a)pyrene	10.	U
193-39-5-----Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----Dibenzo(a,h)anthracene	10.	U
191-24-2-----Benzo(g,h,i)perylene	10.	U

CAGNIKSON 7/8/91

(1) - Cannot be separated from diphenylamine

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

86-5

00047

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3122.8

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2650

Level: (low/med) LOW

Date Received: 5/ 3/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/ 8/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

PC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
INORGANIC ANALYSES DATA

Samples Collected 5/2/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Lead and selenium in S1-5 and selenium in S6-5 were qualified estimated. Results for barium, chromium, selenium, silver, and thallium were qualified estimated. Iron data were qualified as less than the reported values.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (7/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

Inorganic Data Validation  
for  
Environmental Project Control, Inc.  
Samples Collected 5/2/91

Case Narrative

This group contained five water samples including two field blanks. All of the samples were analyzed for total metals except for S1A-3 which was analyzed for only iron and manganese.

Samples validated in this report are noted below:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-5	3113	5/2/91
S1-5FB	3118	5/2/91
S1A-3	3120	5/2/91
S6-5	3121	5/2/91
S6-5FB	3126	5/2/91

S6-5FB was not listed on the cover page but data were included in the data package.



The areas reviewed during validation are listed below.

**CLP Inorganics Data Validation**

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
- IX. ICP Serial Dilution Analysis
- X. Detection Limits
- XI. Sample Result Verification
- XII. Overall Assessment

## Data Validation

### I. Holding Times

All metals analyses were conducted within acceptable holding times.

### II. Calibration

Calibrations for metals were generally satisfactory.

No run log was included in the data package for the ICP analyses, and insufficient notations were made on the raw data to indicate when the samples were analyzed. If the handwritten notations at the bottom of some of the raw results were meant to indicate the times of analyses, a single run apparently took 5-7 minutes. The number of samples analyzed between CCV's and CCB's should not exceed ten which should cover an elapsed time of 50 to 70 minutes. CCV2 was apparently analyzed at 15:03 while CCV3 was analyzed at 16:59 - a difference of almost two hours. Since all of the runs in this time interval were not included in the data package, it was not known if the ten sample limit between CCV's was exceeded. No data were qualified as a result of this problem.

CRDL recoveries were 75% for chromium and 45% for silver. Chromium and silver results were qualified estimated.

### III. Blanks

Iron exceeded the CRDL in the field blank, S1-5FB; zinc exceeded the CRDL in the field blank, S6-5FB. Copper was also found in S6-5FB at slightly above the IDL. No zinc data were qualified. Copper and iron data were qualified as less than the reported values.

The method blank was clean.

The ICB for lead was slightly above the IDL; a CCB for antimony was less than the negative IDL. No data required qualification.

### IV. ICP Interference Check Sample

Interference check sample results were satisfactory.

#### **V. Matrix Spike Sample Analysis**

Matrix spikes were conducted on S1-5 and S6-5. Recoveries were out of acceptable limits in S1-5 for barium (59%), lead (74%), selenium (70%), and thallium (69%). Recoveries were out of acceptable limits in S6-5 for barium (55%), selenium (71%), silver (70%), and thallium (66%). The post-digest spikes for barium were satisfactory (105% and 112%). Results for barium, selenium, silver, and thallium were qualified estimated.

#### **VI. Duplicate Sample Analysis**

Duplicate analyses were conducted on S1-5 and S6-5. Results were satisfactory.

#### **VII. Laboratory Control Sample Analysis**

LCS results were satisfactory.

#### **VIII. Furnace Atomic Absorption Analysis**

The analytical spike for antimony in S6-5 FB was not verifiable since the raw data were not copied well. No data were qualified.

Analytical spikes in S1-5 were out of acceptable limits for lead (81%), selenium (79%), and thallium (84%). Analytical spikes in S6-5 were out of acceptable limits for selenium (71%) and thallium (84%). Selenium was also out of acceptable limits in S1-5D (82%) and S6-5D (73%). Lead and selenium in S1-5 and selenium in S6-5 were qualified estimated.

#### **IX. ICP Serial Dilution Analysis**

Serial dilution analyses were conducted on S1-5 and S6-5. Results were satisfactory.

#### **X. Detection Limits**

The IDL for mercury was equal to the CRDL but no data were qualified. All other IDL's were less than their respective IDL's.

**XI. Sample Result Verification**

Calculations were performed correctly.

**XII. Overall Assessment**

Metals data were considered valid with the following exceptions:

Lead and selenium in S1-5 and selenium in S6-5 were qualified estimated due to analytical spike results.

Results for barium, selenium, silver, and thallium were qualified estimated due to matrix spike recoveries.

Iron data were qualified as less than the reported values due to field blank contamination.

Chromium and silver results were qualified estimated due to poor CRDL recoveries.

## DATA SUMMARY FORM: INORGANICS

Page 1 of 1

Site Name. Wells G &amp; H

WATER SAMPLES  
(ug/L)

Case # 810503.503

Sampling Date(s) 5/2/91

Sample No Dilution Factor Location Lab ID	3113		3118		3120		3121		3126									
	1		1		1		1		1									
	S1-5		S1-5FB		S1A-3		S6-5		S6-5FB									
CRDL																		
200	Aluminum					N/R												
60	Antimony					N/R												
10	*Arsenic					N/R												
200	Barium		22.0	J		N/R		24.0	J									
5	Beryllium					N/R												
5	*Cadmium					N/R												
5000	Calcium		86400			N/R		84000										
10	*Chromium		9.5	UJ	9.5	UJ	N/R	9.5	UJ	9.5	UJ							
50	Cobalt					N/R												
25	Copper		11.0	U		N/R		14.0	U	5.0								
100	Iron		243	U	133			149	U									
3	*Lead		2.6	J		N/R												
5000	Magnesium		11000			N/R		10800										
15	Manganese		30.0			9.0		13.0										
0.2	Mercury					N/R												
40	*Nickel					N/R												
5000	Potassium		3000			N/R		3120										
5	Selenium		0.5	UJ		N/R		0.5	UJ									
10	Silver		10	J	8.1	UJ	N/R	14.0	J	8.1	UJ							
5000	Sodium		111000			N/R		105000		396								
10	Thallium		0.7	UJ		N/R		0.7	UJ									
50	Vanadium					N/R												
20	Zinc		193		10.0	N/R		116		21.0								
10	*Cyanide		N/R		N/R	N/R		N/R		N/R								

\*Action Level Exists

N/R = Not Required

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00023

S1-5

Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: S1-5

Matrix (soil/water): WATER Lab Sample ID: 3113.9

Level (low/med): LOW Date Received: 05/03/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	22.0	B	XJ	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	86400			P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	11.0	B	U	P
7439-89-6	Iron	243		U	P
7439-92-1	Lead	2.6	B	WNJ	F
7439-95-4	Magnesium	11000			P
7439-96-5	Manganese	30.0			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	3000	B		P
7732-49-2	Selenium	0.50	U	WNJ	F
7440-22-4	Silver	10		J	P
7440-23-5	Sodium	111000			P
7440-28-0	Thallium	0.70	U	WNJ	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	193			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00024

S1-5FB

Name: PACE\_INCORPORATED

Contract: EPC

Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: S1-5

Matrix (soil/water): WATER

Lab Sample ID: 3118.0

Level (low/med): LOW

Date Received: 05/03/91

Solids: \_\_\_\_\_

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	12.5	U		P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	448	U		P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	133			P
7439-92-1	Lead	0.50	U		F
7439-95-4	Magnesium	509	U		P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	760	U		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	J	P
7440-23-5	Sodium	390	U		P
7440-28-0	Thallium	0.70	U		F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	10	B		P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR

Artifacts: \_\_\_\_\_

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00025

S1A-3

Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: S1-5

Matrix (soil/water): WATER Lab Sample ID: 3120.1

Level (low/med): LOW Date Received: 05/03/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	9.0	B		P
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:



## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00026

S6-5

Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: S1-5

Matrix (soil/water): WATER

Lab Sample ID: 3121.0

Level (low/med): LOW

Date Received: 05/03/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	24.0	B	NJ	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	84000			P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	14.0	B	U	P
7439-89-6	Iron	149		U	P
7439-92-1	Lead	0.50	U		F
7439-95-4	Magnesium	10800			P
7439-96-5	Manganese	13.0	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	3120	B		P
7782-49-2	Selenium	0.50	U	WNJ	F
7440-22-4	Silver	14.0		NJ	P
7440-23-5	Sodium	105000			P
7440-28-0	Thallium	0.70	U	WNJ	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	116			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

PESTICIDES/PCBS ANALYSIS DATA

Samples Collected 05/02/91

Chemical Analyses Performed By

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

No target compound list (TCL) compounds were detected in the pesticide/PCB fraction.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

Data Validation for  
Environmental Project Control, Inc.

Samples Collected May 2, 1991

Pesticide/PCB Analyses Data

Case Narrative

Three treatment system samples were collected on May 2, 1991 and submitted to Pace, Inc. on May 3, 1991. The laboratory was requested to perform pesticide/PCB target compound list (TCL) analyses.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  range may adversely affect the more volatile compounds.

No TCL compounds were detected in the pesticide/PCB fraction.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3114	S1-5	05/02/91
3118	S1-5FB	05/02/91
3122	S6-5	05/02/91

The areas reviewed during validation are listed below.

## ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment of Data for a Case

## DATA VALIDATION

### I. Sample Holding Times

All samples were extracted and analyzed within holding times.

### II. Instrument Performance

DDT retention time was greater than or equal to 12 minutes.

Retention time windows were reported on Form IX for each column used.

Retention times and calibration factors were accurately recorded on Form IX.

DDT/Endrin degradation was less than 20%.

DBC retention time met the 1.5% criteria for wide-bore capillary columns on the DB-5 and DB-608 columns.

### III. Calibration

#### Initial Calibration Linearity Check Inst V63400 05/13-15/91

Both columns met the 10% relative standard deviation (%RSD) criteria.

#### Analytical Run Sequence

All standards were run within 72 hours.

#### Continuing Calibration

The column used for quantitation met the 15% D criteria.

The column used for confirmation met the 20% D criteria.

### IV. Blanks

No TCL compounds were detected in BLKW06 or BLKW07.

#### **V. Surrogate Recovery**

Surrogate recoveries were acceptable.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

Matrix spike recoveries for the following compounds were outside the established advisory limits:

gamma-BHC (51%)  
heptachlor (5%)  
endrin (14%)

Matrix spike duplicate recoveries for the following compound was outside established advisory limits:

gamma-BHC (52%)

This compound was not detected in the unspiked sample but the non-detect for heptachlor was qualified as an estimate in Sample S1-5. No other data were qualified.

Heptachlor and endrin failed to meet RPD criteria. These compounds were not detected in the unspiked sample and the non-detect for heptachlor was previously qualified. No other data have been qualified.

#### **VII. Field Quality Control Samples**

S1-5FB is a field blank. No TCL compounds were detected.

#### **VIII. Internal Standards Performance**

Standard performance based on the retention time windows was acceptable.

#### **IX. TCL Compound Identification**

No target compounds were detected.

#### **X. Compound Quantitation and Reported Detection Limits**

Detection limit quantifications were acceptable with regard to supporting data.

**XI. Tentatively Identified Compounds**

Not Applicable.

**XII. System Performance**

System performance was acceptable.

**XIII. Overall Assessment of Data for a Case**

No TCL compounds were detected.



1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

51-5

3114

00023

Lab Name: PACE

Contract: EPC

Lab Code: PACE

Case No.:

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66404

Level: (low/med) LOW

Date Received: 5/ 3/91

Moisture: not dec. 100. Dec. 0.

Date Extracted: 5/ 6/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 5/14/91

GC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	.050	UJ
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	.10	U
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	.10	U
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

51-SFB

31180029

Lab Name: PACE

Contract: EPC

Lab Code: PACE

Case No.:

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 1000. (g/mL)ML

Lab File ID: V66408

Level: (low/med) LOW

Date Received: 5/ 3/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/ 6/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 5/14/91

PC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

319-84-6-----Alpha-BHC	.050	U
319-85-7-----Beta-BHC	.050	U
319-86-8-----Delta-BHC	.050	U
58-89-9-----Gamma-BHC	.050	U
76-44-8-----Heptachlor	.050	U
309-00-2-----Aldrin	.050	U
1024-57-3-----Heptachlor Epoxide	.050	U
959-98-8-----Endosulfan I	.050	U
60-57-1-----Dieldrin	.10	U
72-55-9-----4,4'-DDE	.10	U
72-20-8-----Endrin	.10	U
33213-65-9-----Endosulfan II	.10	U
72-54-8-----4,4'-DDD	.10	U
1031-07-8-----Endosulfan Sulfate	.10	U
50-29-3-----4,4'-DDT	.10	U
72-43-5-----Methoxychlor	.50	U
53494-70-5-----Endrin Ketone	.10	U
5103-71-9-----alpha-Chlordane	.50	U
5103-74-2-----gamma-Chlordane	.50	U
8001-35-2-----Toxaphene	1.0	U
12674-11-2-----Arochlor-1016	.50	U
11104-28-2-----Arochlor-1221	.50	U
11141-16-5-----Arochlor-1232	.50	U
53469-21-9-----Arochlor-1242	.50	U
12672-29-6-----Arochlor-1248	.50	U
11097-69-1-----Arochlor-1254	1.0	U
11096-82-5-----Arochlor-1260	1.0	U

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

1A SAMPLE NO.

56-5

3122

Lab Name: PACE

Contract: EPC

Lab Code: PACE

Case No.:

SAS No.:

SDG No.:

00035

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66436

Level: (low/med) LOW

Date Received: 5/ 3/91

Moisture: not dec. 100. dec. 0.

Date Extracted: 5/ 7/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 5/15/91

AC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	.050	U
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	.10	U
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	.10	U
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
AND  
AREAL SAMPLING  
INORGANIC ANALYSES DATA

Samples Collected 5/2/91-5/16/91

Chemical Analyses Performed By  
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

All wet chemistry data is acceptable as modified.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

**Inorganic Data Validation**  
**for**  
**Environmental Project Control, Inc.**  
**Samples Collected 5/2/91-5/16/91**

**Case Narrative**

This group contained 19 water samples. Treatment system samples S1-5, S1-5DUP, and S1-5FB were analyzed for total alkalinity, total dissolved solids, and total suspended solids. Treatment system sample S1A-3 was analyzed for total suspended solids. All other samples in this group were analyzed for chloride, nitrite/nitrate, and total organic carbon.

Samples validated in this report are noted below:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-5	31147	05/02/91
S1-5DUP	31171	05/02/91
S1-5FB	31180	05/02/91
S1A-3	31201	05/02/91
UG16	35681	05/15/91
FDUG16	35690	05/15/91
FBUG16	35720	05/15/91
UC141	35738	05/15/91
UC145	35754	05/15/91
UC72	35762	05/15/91
UC233	35770	05/15/91
G01DB	35789	05/15/91
UG12	35797	05/15/91
UC112	35800	05/15/91
S82	36343	05/16/91
S81S	36351	05/16/91
UC18	36360	05/16/91
UC22	36424	05/16/91
FDUC18	36432	05/16/91

The areas reviewed during validation are listed below.

## **Wet Chemistry Data Validation**

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. Matrix Spike Sample Analysis
- V. Duplicate Sample Analysis
- VI. Sample Result Verification
- VII. Other QC
- VIII. Overall Assessment

## Data Validation

### I. Holding Times

All wet chemistry analyses were conducted within acceptable holding times.

### II. Calibration

All calibration data were acceptable.

### III. Blanks

Field blank results are summarized below.

<u>Sample (FB)</u>	<u>Parameter</u>	<u>Result (ppm)</u>
S1-5	Alkalinity	2
	TDS	3
UG16	TOC	0.42

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value.

No field blanks were provided for samples collected on 15 May or 16 May. Data for these samples should be used with caution.

### IV. Matrix Spike Sample Analysis

Matrix spike analyses were satisfactory except as noted below (Criteria 75%-125%).

<u>Spiked Sample</u>	<u>Parameter</u>	<u>Recovery (%)</u>
UG16	Chloride	70
UC18	Chloride	30

Positive chloride results and detection limits associated with UG-16 were estimated (U and UJ). Positive chloride results associated with UC-18 were estimated (J).



#### V. Duplicate Sample Analysis

Duplicate results were acceptable except as noted below  
(Criteria RPD  $\pm$  20%).

<u>Duplicate Sample</u>	<u>Parameter</u>	<u>RPD (%)</u>
UC-18	TOC	67

Positive TOC results for samples associated with UC-18 were  
estimated (J).

#### VI. Sample Result Verification

Form I's were correct.

#### VII. Overall Assessment

All data were acceptable with the changes noted above.

G &amp; H

PACE Project Number: 810503503

00028

PACE Sample Number: 95 0031147  
Date Collected: 05/02/91  
Date Received: 05/03/91  
Parameter                      Units                      MDL                      S1-5

INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Alkalinity, Total	mg/L	1	78
Solids, Total Dissolved	mg/L	1	649
Solids, Total Suspended	mg/L	1	1

PACE Sample Number: 95 0031155  
Date Collected: 05/02/91  
Date Received: 05/03/91  
Parameter                      Units                      MDL                      S1-5 MS

## INDIVIDUAL PARAMETERS

Alkalinity, Total	mg/L	1	174
Solids, Total Dissolved	mg/L	1	652

PACE Sample Number: 95 0031171  
Date Collected: 05/02/91  
Date Received: 05/03/91  
Parameter                      Units                      MDL                      S1-5 DUP

## INDIVIDUAL PARAMETERS

Alkalinity, Total	mg/L	1	79
Solids, Total Dissolved	mg/L	1	696
Solids, Total Suspended	mg/L	1	1

PACE Sample Number: 95 0031180  
Date Collected: 05/02/91  
Date Received: 05/03/91  
Parameter                      Units                      MDL                      S1-5 FB

## INDIVIDUAL PARAMETERS

Alkalinity, Total	mg/L	1	2
Solids, Total Dissolved	mg/L	1	3
Solids, Total Suspended	mg/L	1	ND

MDL            Method Detection Limit  
ND            Not detected at or above the MDL.

G & H

PACE Project Number: 810503503

00029

PACE Sample Number:

95 0031201

Date Collected:

05/02/91

Date Received:

05/03/91

Parameter

Units

MDL

SIA-3

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

2

MDL

Method Detection Limit

EPC Wells G&H

PACE Project Number: 810516510

00030

PACE Sample Number:

95 0035681

Date Collected:

05/15/91

Date Received:

05/16/91

Parameter

Units

MDL

UG16

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride  
Nitrogen, Nitrate plus Nitrite  
Total Organic Carbon

mg/L

10

256

mg/L

0.2

2.3

mg/L

0.10

2.4

*pn*  
7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

EPC Wells G&H

PACE Project Number: 810516510

00031

PACE Sample Number:

95 0035690

Date Collected:

05/15/91

Date Received:

05/16/91

Parameter

Units

MDL

FD UG16

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

10

254 J

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

2.3

Total Organic Carbon

mg/L

0.10

2.2

*pen*  
7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

EPC Wells G&H

PACE Project Number: 810516510

00033

PACE Sample Number:

95 0035720

Date Collected:

05/15/91

Date Received:

05/16/91

Parameter

Units

MDL

FB UG16

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

1

ND *45*

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

ND

Total Organic Carbon

mg/L

0.10

.42 *J*

*pm 7/18/91*

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

EPC Wells G&H

PACE Project Number: 810516511

PACE Sample Number:

95 0035738

00034

Date Collected:

05/15/91

Date Received:

05/16/91

Parameter

Units

MDL

UC141

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

10

114

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

ND

Total Organic Carbon

mg/L

0.10

5.3

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

per 7/18/91

00035

EPC Wells G&amp;H

PACE Project Number: 810516511

PACE Sample Number:

95 0035754

Date Collected:

05/15/91

Date Received:

05/16/91

ParameterUnitsMDLUC145INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Chloride

mg/L

1

57.4 J

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

ND

Total Organic Carbon

mg/L

0.10

.6

*pen*  
7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



00036

EPC Wells G&H

PACE Project Number: 810516511

PACE Sample Number:

95 0035762

Date Collected:

05/15/91

Date Received:

05/16/91

Parameter

Units

MDL

UC72

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

10

199

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

2.5

Total Organic Carbon

mg/L

0.10

1.4

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

*pan*  
7/18/91

00037

EPC Wells G&amp;H

PACE Project Number: 810516511

PACE Sample Number:

95 0035770

Date Collected:

05/15/91

Date Received:

05/16/91

ParameterUnitsMDLUC233INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Chloride

mg/L

10

476 J

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

1.6

Total Organic Carbon

mg/L

1.00

849

pan  
7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00038

EPC Wells G&H

PACE Project Number: 810516511

PACE Sample Number:

95 0035789

Date Collected:

05/15/91

Date Received:

05/16/91

Parameter

Units

MDL

G01DB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

10

236

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

3.6

Total Organic Carbon

mg/L

0.10

2.1

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

5 per 7/18/91

00039

EPC Wells G&H

PACE Project Number: 810516511

PACE Sample Number:

95 0035797

Date Collected:

05/15/91

Date Received:

05/16/91

Parameter

Units

MDL

UG12

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

1

59.7

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

ND

Total Organic Carbon

mg/L

0.10

11.7

*pen*  
7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00040

EPC Wells G&H

PACE Project Number: 810516511

PACE Sample Number:

95 0035800

Date Collected:

05/15/91

Date Received:

05/16/91

Parameter

Units

MDL

UC112

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

10

207

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

ND

Total Organic Carbon

mg/L

0.10

25

J per 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00041

Wells G&amp;H

PACE Project Number: 810517502

PACE Sample Number:

95 0036343

Date Collected:

05/16/91

Date Received:

05/17/91

ParameterUnitsMDLS 8 2INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Chloride

mg/L

1

52

J

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

1.7

Total Organic Carbon

mg/L

0.10

20.5

J

*per 7/18/91*

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00042

Wells G&H

PACE Project Number: 810517502

PACE Sample Number:

95 0036351

Date Collected:

05/16/91

Date Received:

05/17/91

Parameter

Units

MDL

S 8 1S

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

1

25.6 J

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

1.5

Total Organic Carbon

mg/L

0.10

16 J

*pan* 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00043

Wells G&H

PACE Project Number: 810517502

PACE Sample Number:

95 0036360

Date Collected:

05/16/91

Date Received:

05/17/91

Parameter

Units

MDL

UC18

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

10

654 J

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

3.1

Total Organic Carbon

mg/L

0.10

4.0 J

per 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



00045

Wells G&H

PACE Project Number: 810517502

PACE Sample Number:

95 0036424

Date Collected:

05/16/91

Date Received:

05/17/91

Parameter

Units

MDL

UC22

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

10

256 J

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

3.2

Total Organic Carbon

mg/L

0.10

1.0 J

per 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00046

Wells G&amp;H

PACE Project Number: 810517502

PACE Sample Number:

95 0036432

Date Collected:

05/16/91

Date Received:

05/17/91

ParameterUnitsMDLFDUC18INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Chloride

mg/L

10

652

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

2.9

Total Organic Carbon

mg/L

0.10

2.0

*J per 7/18/91*

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/3/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Tetrachloroethene was the only target compound list (TCL) compound detected above the detection limit. No tentatively identified compounds (TICs) were detected.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Six groundwater samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 3, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S4-4	3157	05/03/91
S1-6	3162	05/03/91
S1-6Dup	3164	05/03/91
S1-6TB	3165	05/03/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

Since S4-4 was analyzed outside the 7 day holding time for non-preserved samples but within the 14 day holding time, detection limits for aromatic compounds were estimated. All other analyses were performed within the 7-day holding time.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### **A. Initial**

Initial calibration criteria were met.

### **B. Continuing**

Continuing calibration criteria were met with the exception of the % difference for 2-butanone (31.1) and vinyl acetate (27.1) on May 8, 1991 and 2-butanone (49.1) on May 13, 1991. The data were not affected.

## **IV. Blanks**

Methylene chloride was detected in the trip blank (S1-6TB) at 6 ppb and in the three method blanks at 9 ppb, 4 ppb, and 2 ppb. All methylene chloride results were qualified as less than the reported values.

## **V. Surrogate Recovery**

All surrogate recoveries were within acceptance criteria.

## **VI. Matrix Spike/Matrix Spike Duplicate**

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.

## **VII. Field Duplicates**

Tetrachloroethene was detected in the sample at 1100 ppb, the field duplicate at 1300 ppb, in the MS at 1100 ppb, and in the MSD at 1000 ppb (RSD 11). The data are acceptable.

## **VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

## **IX. TCL Compound Identification**

Target compounds were properly identified.

## **X. Compound Quantitation and Reported Detection Limits**

Detection limits were acceptable with regard to the supporting data. Acetone (39 ppb) was rejected from S1-6 Dup since it was not duplicated in the sample, MS, or MSD. Chloroform (30 ppb) and toluene (45 ppb) were rejected from S1-6 since they were not duplicated in the field duplicate, MS, or MSD.

## **XI. Tentatively Identified Compounds**

No TICs were detected.

## **XII. System Performance**

System performance requires attention. Manual integrations should be addressed. One sample exceeded holding time.

## **XIII. Overall Assessment of Data for a Case**

Aromatic compounds in Sample S4-4 were qualified as estimates.

Methylene chloride results were qualified as less than the reported values.

Acetone was rejected in Sample S1-6DUP.

Chloroform and toluene were rejected in Sample S1-6.



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S4-4

00022

Lab Code: PACE

Case No.: EPC

SAS No.:

SDS No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3157.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2573

Level: (low/med) LOW

Date Received: 5/ 4/91

Moisture: not dec.100.

Date Analyzed: 5/13/91

Column: (pack/cap) PACT

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	50.	U
74-83-9	-----Bromomethane	50.	U
75-01-4	-----Vinyl Chloride	50.	U
75-00-3	-----Chloroethane	50.	U
75-09-2	-----Methylene Chloride	25.	U
67-64-1	-----Acetone	50.	U
75-15-0	-----Carbon Disulfide	25.	U
75-35-4	-----1,1-Dichloroethene	25.	U
75-34-3	-----1,1-Dichloroethane	25.	U
540-59-0	-----1,2-Dichloroethene (total)	25.	U
67-66-3	-----Chloroform	25.	U
107-06-2	-----1,2-Dichloroethane	25.	U
78-93-3	-----2-Butanone	50.	U
71-55-6	-----1,1,1-Trichloroethane	25.	U
56-23-5	-----Carbon Tetrachloride	25.	U
108-05-4	-----Vinyl Acetate	50.	U
75-27-4	-----Bromodichloromethane	25.	U
78-87-5	-----1,2-Dichloropropane	25.	U
10061-01-5	-----cis-1,3-Dichloropropene	25.	U
79-01-6	-----Trichloroethene	25.	U
124-48-1	-----Dibromochloromethane	25.	U
79-00-5	-----1,1,2-Trichloroethane	25.	U
71-43-2	-----Benzene	25.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	25.	U
75-25-2	-----Bromoform	25.	U
108-10-1	-----4-Methyl-2-Pentanone	50.	U
591-78-6	-----2-Hexanone	50.	U
127-18-4	-----Tetrachloroethene	440.	
79-34-5	-----1,1,2,2-Tetrachloroethane	25.	U
108-88-3	-----Toluene	25.	UJ
108-90-7	-----Chlorobenzene	25.	UJ
100-41-4	-----Ethylbenzene	25.	UJ
100-42-5	-----Styrene	25.	UJ
1330-20-7	-----Xylene (total)	25.	UJ

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S4-4

00023

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3157.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2573

Level: (low/med) LOW

Date Received: 5/ 4/91

% Moisture: not dec.100.

Date Analyzed: 5/13/91

Columns: (pac/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-6  
00028

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3162.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2513

Level: (low/med) LOW

Date Received: 5/ 4/91

% Moisture: not dec.100.

Date Analyzed: 5/ 9/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	100.	U
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	57.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	50.	U
67-66-3	-----Chloroform	20.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	50.	U
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	1100.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	48.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-6

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No. 00029

Matrix: (soil/water) WATER

Lab Sample ID: 3162.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2513

Level: (low/med) LOW

Date Received: 5/ 4/91

% Moisture: not dec.100.

Date Analyzed: 5/ 9/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-6DUP

00037

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3164.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2516

Level: (low/med) LOW

Date Received: 5/ 4/91

Moisture: not dec.100.

Date Analyzed: 5/ 9/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	100.	U
75-00-3	Chloroethane	100.	U
75-09-2	Methylene Chloride	38.	BU
67-64-1	Acetone	25.	SR
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	50.	U
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethene (total)	50.	U
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	50.	U
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	50.	U
10061-02-6	Trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachloroethene	1300.	
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	50.	U
108-90-7	Chlorobenzene	50.	U
100-41-4	Ethylbenzene	50.	U
100-42-5	Styrene	50.	U
1330-20-7	Xylene (total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-6DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00038

Matrix: (soil/water) WATER

Lab Sample ID: 3164.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2516

Level: (low/med) LOW

Date Received: 5/ 4/91

% Moisture: not dec.100.

Date Analyzed: 5/ 9/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-6TB

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00045

Matrix: (soil/water) WATER

Lab Sample ID: 3165.1

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2496

Level: (low/med) LOW

Date Received: 5/ 4/91

% Moisture: not dec.100.

Date Analyzed: 5/ 8/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	0
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	6.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-6TB

Lab Name: PACE

Contract: .

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No. 00046

Matrix: (soil/water) WATER

Lab Sample ID: 3165.1

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2496

Level: (low/med) LOW

Date Received: 5/ 4/91

% Moisture: not dec.100.

Date Analyzed: 5/ 8/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/3/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

All positive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds and the internal standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

The chain of custody forms for this sample delivery group do not provide a date of sampling, nor do they indicate the method of transfer of samples between the sampler and laboratory. It was assumed, based on other project documentation, that these samples were collected on May 3, 1991.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Seven treatment system samples were collected and submitted to PACE, Inc. on May 3, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S3-4	3156	05/03/91
S5-4	3158	05/03/91
S6-6	3159	05/03/91
S6-6DUP	3160	05/03/91
S6-6TB	3161	05/03/91
S1-6FB	3163	05/03/91
S2-4	3167	05/03/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples were analyzed outside the 7-day holding time but within the 14-day holding time for volatile aqueous samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Areas were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

### **A. Initial**

Initial calibration criteria were met on 5/11/91 and 5/16/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/15/91 with the exception of the % difference for trans-1,3-dichloropropene (actual 45.7; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/17/91.

## **IV. Blanks**

Methylene chloride was reported in the trip blank at 2.0 ug/L. As discussed in Section X, this concentration was below the MDL determined through the PQL study for this project and should not have been reported. Methylene chloride was changed to "ND" on the results form for Sample S6-6TB.

Method blanks and the field blank were clean.

#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

The laboratory did not perform a matrix spike or matrix spike duplicate for this sample delivery group.

#### VII. Field Duplicates

Samples S6-6 and S6-6DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45

<u>Compound</u>	<u>MDL (ug/L)</u>
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The result reported for trichloroethene in Sample S2-4 was quantified incorrectly. The correct result was 0.70 ug/L.

The result reported for tetrachloroethene (110 ug/L) in Sample S3-4 was well beyond the calibration range of the instrument (25 ug/L). This result was qualified as estimated. Sample S3-4 should not have been submitted for Method 524.2 analyses.

All other results and detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were reported for this sample delivery group.

#### **XII. System Performance**

System performance was acceptable.

#### **XIII. Overall Assessment of Data for a Case**

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

Method detection limits were corrected where necessary. The result for trichloroethene in Sample S2-4 was corrected to 0.70 ug/L.

00026

Unifirst

PACE Project Number: 810504500

PACE Sample Number:

95 0031589

Date Collected:

05/03/91

Date Received:

05/04/91

ParameterUnitsMDLS5-4ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	u) <i>2/6/91</i>
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	4.9	
Carbon tetrachloride	ug/L	0.5	ND	u)
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



Unifirst

PACE Project Number: 810500500 2 1

PACE Sample Number:

95 0031562

Date Collected:

05/03/91

Date Received:

05/04/91

Parameter

Units

MDL

S3-4

ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	und exp 7/6/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	110 J	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND u)	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL Method Detection Limit

ND Not detected at or above the MDL

00031

Unifirst

PACE Project Number: 810504500

PACE Sample Number:

95 0031597

Date Collected:

05/03/91

Date Received:

05/04/91

ParameterUnitsMDLS6-6ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	u) <i>ex</i> 1/6/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00035

Unifirst

PACE Project Number: 810504500

PACE Sample Number:

95 0031600

Date Collected:

05/03/91

Date Received:

05/04/91

ParameterUnitsMDLS6-6 DupORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

u) <sup>EX8</sup>  
7/6/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810504500

00039

PACE Sample Number:

95 0031619

Date Collected:

05/03/91

Date Received:

05/04/91

ParameterUnitsMDLS6-6 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

us 8x3  
7/6/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00043

Unifirst

PACE Project Number: 810504500

PACE Sample Number:

95 0031635

Date Collected:

05/03/91

Date Received:

05/04/91

ParameterUnitsMDLSI-6 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	2-ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

w/ EXA  
7/6/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810504500

PACE Sample Number:

95 0031678

Date Collected:

05/03/91

Date Received:

05/04/91

ParameterUnitsMDLS2-4ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	w/ <del>PKS</del> 7/6/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	15 J	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/4/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

All positive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds and the internal standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

A large (41 seconds) shift in retention times occurred after analysis of the first sample (S3-5) of this sample delivery group. No compounds were detected in this sample and no extraneous peaks were observed in the sample chromatogram. No qualification of data was made based on this shift. This shift should have been noted in the case narrative for this data package.

The case narrative reported that foaming occurred during analysis of all samples except the trip blank and the field blank.

Cooler temperature upon receipt of samples by the laboratory was 10°C. Temperatures outside the 4°C  $\pm$  2°C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.





These codes are used on the accompanying data summary sheets  
to qualify some of the results.

### Case Narrative

Six treatment system samples were collected and submitted to PACE, Inc. on May 4, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-7FB	3171	05/04/91
S2-5	3173	05/04/91
S3-5	3174	05/04/91
S6-7	3176	05/04/91
S6-7DUP	3177	05/04/91
S6-7TB	3178	05/04/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples were analyzed outside the 7-day holding time but within the 14-day holding time for nonpreserved samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Areas were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

### **A. Initial**

Initial calibration criteria were met on 5/16/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/17/91 (08:15) and 5/17/91 (20:43).

## **IV. Blanks**

The trip blank, field blank, and method blanks were clean.

## **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

## **VI. Matrix Spike/Matrix Spike Duplicate**

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-7. The percent recoveries for 1,1-dichloroethene were below QC criteria in the MS and the MSD. The

percent recovery for benzene was below QC criteria in the MSD. No positive results for these compounds were reported, so no data were qualified.

#### VII. Field Duplicates

Samples S6-7 and S6-7DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas were acceptable. A large (41 seconds) shift in retention times occurred after analysis of the first sample (S3-5) in this sample delivery group. No compounds were detected in Sample S3-5 and no extraneous peaks were observed in the sample chromatogram. Data were not qualified.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45

<u>Compound</u>	<u>MDL (ug/L)</u>
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The result reported for trichloroethene in Sample S2-5 was quantified incorrectly. The correct result was 1.1 ug/L.

The result reported for tetrachloroethene in Sample 2-5 (27 ug/L) was slightly beyond the calibration range of the instrument (25 ug/L). This result met precision and accuracy criteria and was accepted unqualified.

All other results and detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

#### XII. System Performance

System performance was acceptable with the exception of the shift of retention times.

#### XIII. Overall Assessment of Data for a Case

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

The result for trichloroethene in Sample S2-5 was corrected to 1.1 ug/L.

Unifirst

PACE Project Number: 810504501

PACE Sample Number:

95 0031716

Date Collected:

05/04/91

Date Received:

05/04/91

ParameterUnitsMDLSI-7 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

44A 7/6/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810504501

PACE Sample Number:

95 0031732

Date Collected:

05/04/91

Date Received:

05/04/91

ParameterUnitsMDLS2-5ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	27
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

E5 7/4/91

13 1.1

MDL Method Detection Limit  
 ND Not detected at or above the MDL.



Unifirst

PACE Project Number: 810504501

PACE Sample Number:

95 0031740

Date Collected:

05/04/91

Date Received:

05/04/91

ParameterUnitsMDLS3-5ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	w/ 1/6/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL Method Detection Limit

ND Not detected at or above the MDL.

Unifirst

PACE Project Number: 810504501

PACE Sample Number:

95 0031767

Date Collected:

05/04/91

Date Received:

05/04/91

ParameterUnitsMDLS6-7ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

ND us 2/6/91

MDL Method Detection Limit

ND Not detected at or above the MDL.

Unifirst

PACE Project Number: 810504501

PACE Sample Number:

95 0031775

Date Collected:

05/04/91

Date Received:

05/04/91

ParameterUnitsMDLS6-7 DupORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

63  
2 KB  
7/6/91

MDL Method Detection Limit

ND Not detected at or above the MDL.

Unifirst

PACE Project Number: 810504501

PACE Sample Number:

95 0031783

Date Collected:

05/04/91

Date Received:

05/04/91

ParameterUnitsMDLS6-7 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

W  
 2 kb  
 7/6/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G & H PROJECT  
TREATMENT SYSTEMS SAMPLING  
VOLATILES ANALYSIS DATA

Samples Collected 5/4/91

Chemical Analyses Performed By:

PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Detection limits for aromatic compounds were estimated in Samples S1-7, S1-7Dup, S1-7TB, and S4-5. Detection limits for 2-butanone were estimated in samples S1-7 and S1-7Dup; detection limits for trans-1,3-dichloropropene were estimated in all four samples.

Acetone levels detected below the quantitation limit (CRQL) in Samples S1-7Dup and S4-5 were adjusted to "none detected" at the CRQL, based on associated blank contamination.

Collection times recorded on the Chain of Custody are different for Samples S1-7, S1-7Dup, S1-7MS, and S1-7MSD; these samples are not, therefore, true duplicate samples. Other problems identified on the Chain of Custody records include: (1) corrections to entries on the forms are made incorrectly, and do not include initials and date; (2) the last (third) set of transfer signatures does not indicate the affiliation of the individuals involved; (3) no preservation, including cold storage of the samples, is documented; and (4) separate entries should not be made on the custody record for MS/MSD samples.

Validation of organic data is conducted in conformance with U.S. Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses (February 1, 1988), with modifications by EPA Region I (November 1, 1988).

Based on the supporting documentation, qualifier codes as reported by the laboratory may be added, deleted, or modified by the data validator. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the referenced Functional Guidelines:

- U - The material was analyzed for, but not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.



These codes are used on the accompanying Form I's (copied from the data package) to qualify some of the results as appropriate based on the data review.

### Case Narrative

Six treatment system samples (including separate samples for matrix spike and matrix spike duplicate analysis) were collected on May 4, 1991, and submitted to PACE, Inc. on the same date. The laboratory was requested to perform volatile organics analysis (VOA); the EPA Contract Laboratory Program (CLP) Statement of Work dated 2/88 was followed.

The following samples are included in this Sample Delivery Group:

<u>Client ID</u>	<u>Lab ID</u>	<u>Collection Date</u>
S1-7	3168	05/04/91
S1-7Dup	3169	05/04/91
S1-7TB	3170	05/04/91
S4-5	3175	05/04/91

Volatiles analysis results for these samples were reported by the laboratory under Project Number 810504.501.



### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

Samples S1-7, S1-7Dup, S1-7TB, and S4-5 were analyzed beyond the 7-day holding time for samples that are not preserved with hydrochloric acid (HCl) in the field, but were all analyzed within 14 days of collection. Detection limits for all aromatic compounds (benzene, toluene, ethylbenzene, chlorobenzene, styrene, and xylenes) in these samples are qualified as estimated "UJ"; no positive results were reported for any of the aromatic compounds.

The chain of custody records do not indicate that the samples were stored at 4°C (or in any form of cold storage) from the time of collection until arrival at the laboratory. Cold storage is a form of preservation, and is especially important for samples intended for volatiles analysis. No qualifiers are applied on this basis due to same-day laboratory delivery and documentation of proper storage conditions at the laboratory contained in the Case Narrative to the data package.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### **A. Initial**

The samples were analyzed under a single initial calibration, performed on 4/24/91. All criteria were met in this calibration.

### **B. Continuing**

Sample analyses were performed on instrument J, on 2 separate analysis dates.

Continuing calibration criteria were met on 5/12/91 with the exception of the Percent Difference (%D) for 2-butanone (actual 26, criterion 25). In addition, the Response Factor (RF) reported for trans-1,3-dichloropropene is incorrect. A value of 0.287 is hand-

written on Form VII; the correct value (based on the manual area found on the quantitation report) is 0.224. The %D for trans-1,3-dichloropropene (actual 42, criterion 25) was also incorrectly reported, as 25. Detection limits for trans-1,3-dichloropropene in S1-7TB and S4-5 are qualified as estimated, "UJ". No other data are affected.

Continuing calibration criteria were met on 5/13/91 with the exception of the %D for 2-butanone (actual 49, criterion 25) and trans-1,3-dichloropropene (actual 52, criterion 25). Detection limits for both compounds in S1-7 and S1-7Dup are qualified as estimated, "UJ". The reported RF for trans-1,3-dichloropropene is again incorrect (0.184 actual, 0.236 reported). The %D referred to above is based on the correctly calculated RF. No data are affected by this error.

#### **IV. Blanks**

Acetone was reported at 2 ug/L in VBLK02; no target compounds or extraneous peaks were detected in VBLK01 or the trip blank. Acetone results in S1-7Dup and S4-5 were qualified as less than the dilution-adjusted CRQL.

#### **V. Surrogate Recovery**

Recovery of toluene-d8 in S1-7MSD was slightly high at 113% (QC limits 88-110%). This is probably due to the unusually low area obtained for internal standard (IS) #3, used to calculate the toluene results. The area for IS#3 was within acceptance limits, but only 10% higher than the minimum acceptable area. No data are affected.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample S1-7. All Percent Recovery (%R) and Relative Percent Difference (RPD) results were within acceptance criteria.

#### **VII. Field Duplicates**

According to the chain of custody record, Samples S1-7 and S1-7Dup were collected at different times; by definition, therefore, they are not true duplicate samples.

Tetrachloroethene (PCE) was the only target compound reported for S1-7 and S1-7Dup, at 1600 ppb and 1300 ppb, respectively. Agreement between these values is good, with an RPD of 24%.

#### **VIII. Internal Standards Performance**

Internal standard areas and retention times were within acceptable limits for all sample and QC analyses in this sample delivery group. All three IS areas in S1-7MSD were unusually low, though still within the QC limits; this could be the result of a poor injection of the IS solution at the time of analysis. Data are not affected.

#### **IX. TCL Compound Identification**

TCL compound identifications were acceptable and properly documented in all samples.

#### **X. Compound Quantitation and Reported Detection Limits**

Samples S1-7, S1-7Dup, and S4-5 were analyzed as dilutions to achieve PCE results within the linear range of the instrument; no undiluted runs of these samples were reported or performed, per conversation with C. Corkey of PACE, Inc. The PCE concentrations reported in the diluted analyses were acceptable.

Contract Required Quantitation Limits (CRQL's) were appropriately adjusted to reflect the dilutions performed for each sample. No other positive results were reported.

#### **XI. Tentatively Identified Compounds**

No tentatively identified compounds (TIC's) were observed or reported in these samples.

#### **XII. System Performance**

System performance was satisfactory throughout the analysis of these samples, with the exception of the missed holding times..

#### **XIII. Overall Assessment**

The sample results are usable as reported with the following qualifications and modifications:

Detection limits for the aromatic compounds and for trans-1,3-dichloropropene were estimated in all four samples.

Detection limits for 2-butanone were estimated in S1-7 and S1-7Dup.

Acetone results in S1-7Dup and S4-5 were qualified as less than the dilution-adjusted CRQL.

Incomplete, unclear, or inaccurate Chain of Custody records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the custody records in this data package:

1. Corrections are made as "write-overs" and do not include initials of the person who made them or the date they were made.
2. The third set of signatures does not include the affiliations of the parties involved.
3. No preservation is recorded, including cold storage.
4. Analyses being requested are vague, i.e. "CLP" only.
5. MS/MSD analyses are a laboratory-initiated quality control activity; there should not, therefore, be separate samples on the chain of custody identified as "MS" and "MSD".

Manually integrated areas should be documented in the data package to allow review of the integration method used.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-7

00020

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3168.6

Sample wt/vol: 0.4 ~~5~~ (g/mL) ML

Lab File ID: J2574

Level: (low/med) LOW

Date Received: 5/4/91

% Moisture: not dec.100.

Date Analyzed: 5/12/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	120.	U
74-83-9	-----Bromomethane	120.	U
75-01-4	-----Vinyl Chloride	120.	U
75-00-3	-----Chloroethane	120.	U
75-09-2	-----Methylene Chloride	62.	U
67-64-1	-----Acetone	120.	U
75-15-0	-----Carbon Disulfide	62.	U
75-35-4	-----1,1-Dichloroethene	62.	U
75-34-3	-----1,1-Dichloroethane	62.	U
540-59-0	-----1,2-Dichloroethene (total)	62.	U
67-66-3	-----Chloroform	62.	U
107-06-2	-----1,2-Dichloroethane	62.	U
78-93-3	-----2-Butanone	120.	U
71-55-6	-----1,1,1-Trichloroethane	62.	U
56-23-5	-----Carbon Tetrachloride	62.	U
108-05-4	-----Vinyl Acetate	120.	U
75-27-4	-----Bromodichloromethane	62.	U
78-87-5	-----1,2-Dichloropropane	62.	U
10061-01-5	-----cis-1,3-Dichloropropene	62.	U
79-01-6	-----Trichloroethene	62.	U
124-48-1	-----Dibromochloromethane	62.	U
79-00-5	-----1,1,2-Trichloroethane	62.	U
71-43-2	-----Benzene	62.	U
10061-02-6	-----Trans-1,3-Dichloropropene	62.	U
75-25-2	-----Bromoform	62.	U
108-10-1	-----4-Methyl-2-Pentanone	120.	U
591-78-6	-----2-Hexanone	120.	U
127-18-4	-----Tetrachloroethene	1600.	
79-34-5	-----1,1,2,2-Tetrachloroethane	62.	U
108-88-3	-----Toluene	62.	U
108-90-7	-----Chlorobenzene	62.	U
100-41-4	-----Ethylbenzene	62.	U
100-42-5	-----Styrene	62.	U
1330-20-7	-----Xylene (total)	62.	U

1A  
VOI FILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-7DUP

00026

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3169.4

Sample wt/vol: 0.4 ~~5~~ (g/mL) ML

Lab File ID: J2577

Level: (low/med) LOW

Date Received: 5/ 4/91

% Moisture: not dec.100.

Date Analyzed: 5/13/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	Chloromethane	120.	U
74-83-9	Bromomethane	120.	U
75-01-4	Vinyl Chloride	120.	U
75-00-3	Chloroethane	120.	U
75-09-2	Methylene Chloride	62.	U
67-64-1	Acetone	120. <del>100</del>	U
75-15-0	Carbon Disulfide	62.	U
75-35-4	1,1-Dichloroethene	62.	U
75-34-3	1,1-Dichloroethane	62.	U
540-59-0	1,2-Dichloroethene (total)	62.	U
67-66-3	Chloroform	62.	U
107-06-2	1,2-Dichloroethane	62.	U
78-93-3	2-Butanone	120.	U
71-55-6	1,1,1-Trichloroethane	62.	U
56-23-5	Carbon Tetrachloride	62.	U
108-05-4	Vinyl Acetate	120.	U
75-27-4	Bromodichloromethane	62.	U
78-87-5	1,2-Dichloropropane	62.	U
10061-01-5	cis-1,3-Dichloropropene	62.	U
79-01-6	Trichloroethene	62. <del>120</del>	U
124-48-1	Dibromochloromethane	62.	U
79-00-5	1,1,2-Trichloroethane	62.	U
71-43-2	Benzene	62.	U
10061-02-6	Trans-1,3-Dichloropropene	62.	U
75-25-2	Bromoform	62.	U
108-10-1	4-Methyl-2-Pentanone	120.	U
591-78-6	2-Hexanone	120.	U
127-18-4	Tetrachloroethene	1300.	U
79-34-5	1,1,2,2-Tetrachloroethane	62.	U
108-88-3	Toluene	62.	U
108-90-7	Chlorobenzene	62.	U
100-41-4	Ethylbenzene	62.	U
100-42-5	Styrene	62.	U
1330-20-7	Xylene (total)	62.	U

1A  
VOI FILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-7TB

00033

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3170.8

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2555

Level: (low/med) LOW

Date Received: 5/ 4/91

% Moisture: not dec.100.

Date Analyzed: 5/13/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

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VOL ILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S4-5

00038

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3175.9

Sample wt/vol: 1. ~~5~~ (g/mL) ML

Lab File ID: J2563

Level: (low/med) LOW

Date Received: 5/ 4/91

% Moisture: not dec.100.

Date Analyzed: 5/13/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	50.	U
74-83-9	-----Bromomethane	50.	U
75-01-4	-----Vinyl Chloride	50.	U
75-00-3	-----Chloroethane	50.	U
75-09-2	-----Methylene Chloride	25.	U
67-64-1	-----Acetone	50. <del>25</del>	<del>U</del> U
75-15-0	-----Carbon Disulfide	25.	U
75-35-4	-----1,1-Dichloroethene	25.	U
75-34-3	-----1,1-Dichloroethane	25.	U
540-59-0	-----1,2-Dichloroethene (total)	25.	U
67-66-3	-----Chloroform	25.	U
107-06-2	-----1,2-Dichloroethane	25.	U
78-93-3	-----2-Butanone	50.	U
71-55-6	-----1,1,1-Trichloroethane	25.	U
56-23-5	-----Carbon Tetrachloride	25.	U
108-05-4	-----Vinyl Acetate	50.	U
75-27-4	-----Bromodichloromethane	25.	U
78-87-5	-----1,2-Dichloropropane	25.	U
10061-01-5	-----cis-1,3-Dichloropropene	25.	U
79-01-6	-----Trichloroethene	25.	U
124-48-1	-----Dibromochloromethane	25.	U
79-00-5	-----1,1,2-Trichloroethane	25.	U
71-43-2	-----Benzene	25.	<del>U</del> UJ
10061-02-6	-----Trans-1,3-Dichloropropene	25.	<del>U</del> UJ
75-25-2	-----Bromoform	25.	U
108-10-1	-----4-Methyl-2-Pentanone	50.	U
591-78-6	-----2-Hexanone	50.	U
127-18-4	-----Tetrachloroethene	590.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	25.	U
108-88-3	-----Toluene	25.	<del>U</del>
108-90-7	-----Chlorobenzene	25.	<del>U</del>
100-41-4	-----Ethylbenzene	25.	<del>U</del>
100-42-5	-----Styrene	25.	<del>U</del>
1330-20-7	-----Xylene (total)	25.	<del>U</del>

CAE 6/28/91

CAE 7/1/91

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
INORGANIC ANALYSES DATA

Samples Collected 5/4/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:  
Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Metals analytical data presented for this sample delivery group were fair. Several positive sample results were rejected due to blank contamination. All unqualified sample data may be used without reservation.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).

UJ - The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

Inorganic Data Validation  
for  
Environmental Project Control, Inc.  
Samples Collected 5/4/91

Case Narrative

This group contained three treatment system samples including one field blank to be analyzed for total metals.

Samples validated in this report are noted below:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-7	3168	5/04/91
S1-7FB	3171	5/04/91
S6-7	3176	5/04/91

The areas reviewed during validation are listed below.

## CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
- IX. ICP Serial Dilution Analysis
- X. Detection Limits
- XI. Sample Result Verification
- XII. Overall Assessment

## Data Validation

### I. Holding Times

All metals analyses were conducted within acceptable holding times.

### II. Calibration

Calibrations for metals were satisfactory.

One of the standards analyzed to establish the calibration curve for AA must be at the CRDL. The CRDL for antimony is 60 ppb, and the highest standard analyzed was 45 ppb. Since antimony was not detected above 20 ppb in any sample (including the matrix spike), data quality was not affected.

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within  $\pm 20\%$  of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for cadmium and silver were estimated.

### III. Blanks

No preparation or calibration blanks were above the CRDLs or less than the negative CRDLs.

The preparation blank contained antimony (-1.4) below its negative IDL.

The field blank contained calcium (607 ppb), sodium (767 ppb), and zinc (34 ppb).

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Calcium and sodium for S1-7FB and zinc results were qualified as less than the reported values.

Antimony detection limits were raised to 2.6 U because of the negative blank values.

#### **IV. ICP Interference Check Sample**

Interference check sample results were satisfactory.

#### **V. Matrix Spike Sample Analysis**

Matrix spike analyses were satisfactory except for barium (49% recovery) and thallium (63.6% recovery). Positive results and detection limits for the above analytes were qualified as estimated (J and UJ).

#### **VI. Duplicate Sample Analysis**

Duplicate analyses for dissolved metals were satisfactory.

#### **VII. Laboratory Control Sample Analyses**

Laboratory control sample results were satisfactory.

#### **VIII. Furnace Atomic Absorption Analysis**

Duplicate injections were performed for all samples and agreed within  $\pm 20\%$ .

#### **IX. ICP Serial Dilution Analysis**

Serial dilutions were conducted on S1-7. All results met the validation criteria of 15% with the exception of zinc (16.4% D). Positive results and detection limits for zinc were qualified as estimated.

#### **X. Detection Limits**

Instrument detection limits (IDLs) should be less than the contract required detection limits (CRDLs). The IDL reported for mercury is equal to its CRDL. Mercury was not detected in any of the samples, so no data were qualified.

#### **XI. Sample Result Verification**

Sample results were acceptable as qualified.



### XII. Overall Assessment

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within  $\pm 20\%$  of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for cadmium and silver were estimated.

The preparation blank contained antimony (-1.4) below its negative IDL.

The field blank contained calcium (607 ppb), sodium (767 ppb), and zinc (34 ppb).

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Calcium and sodium for S1-7FB and zinc results were affected.

Antimony detection limits were raised to 2.6 U because of the negative blank values.

Matrix spike analyses were satisfactory except for barium (49% recovery) and thallium (63.6% recovery). Positive results and detection limits for the above analytes were qualified as estimated (J and UJ).

Serial dilutions were conducted on S1-7. All results met the validation criteria of 15% with the exception of zinc (16.4% D). Positive results and detection limits for zinc were qualified as estimated.

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00015

S1-7

Lab Name: PACE\_INCORPORATED

Contract: EPC

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: S1-7

Matrix (soil/water): WATER

Lab Sample ID: 3168.6

Level (low/med): LOW

Date Received: 05/04/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U	W	F
7440-39-3	Barium	16.0	B	N	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	83500		E	P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	5.0	B		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	10400			P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	2460	B		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	96800			P
7440-28-0	Thallium	0.70	U	WN	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	146		E	P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR

Artifacts: \_\_\_\_\_

Comments:

## INORGANIC ANALYSES DATA SHEET

00016

S1-7FB

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: S1-7

Matrix (soil/water): WATER

Lab Sample ID: 3171.6

Level (low/med): LOW

Date Received: 05/04/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	12.5	U		P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	607	U		P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	509	U		P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	760	U		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	767	U		P
7440-28-0	Thallium	0.70	U		F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	34.0	U		P
	Cyanide				NR

2.64

5

5

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Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

## INORGANIC ANALYSES DATA SHEET

00017

S6-7

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: S1-7

Matrix (soil/water): WATER Lab Sample ID: 3176.7

Level (low/med): LOW Date Received: 05/04/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U	W	F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	19.0	B	N	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	86900		E	P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	3.2			F
7439-95-4	Magnesium	10400			P
7439-96-5	Manganese	6.0	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	2250	B		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	99800			P
7440-28-0	Thallium	0.70	U	WN	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	118		E	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/5/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Tetrachloroethene was the only target compound list (TCL) compound detected above the detection limit. No tentatively identified compounds (TICs) were detected.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Seven treatment system samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 5, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-8	3179	05/05/91
S1-8Dup	3181	05/05/91
S1-8TB	3182	05/05/91
S2-6	3184	05/05/91
S4-6	3186	05/05/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



## **I. Holding Times**

Since samples were analyzed outside the 7 day holding time for non-preserved samples but within the 14 day holding time, detection limits for aromatic compounds were estimated.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### **A. Initial**

Initial calibration criteria were met.

### **B. Continuing**

Continuing calibration criteria were met with the exception of the % difference for 2-butanone (actual 30.7-criteria 25) on May 13, 1991 and 2-butanone (actual 36.6-criteria 25) on May 14, 1991. The data were not affected.

## **IV. Blanks**

Acetone was detected in method blank VBLK02 (1J) and in S1-8TB (7BJ). Methylene chloride was detected in method blank VBLK01 (1J) and in S108TB (2J). Acetone reported in the trip blank (S1-8TB) was qualified as less than the reported value.

## **V. Surrogate Recovery**

All surrogate recoveries were within acceptance criteria.

## **VI. Matrix Spike/Matrix Spike Duplicate**

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.

## VII. Field Duplicates

Tetrachloroethane was detected in the sample at 1900 ppb, the field duplicate at 1700 ppb, in the MS at 1700 ppb, and in the MSD at 1500 ppb (RSD 9.6). The data are acceptable.

## VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

Target compounds were properly identified.

## X. Compound Quantitation and Reported Detection Limits

Detection limits were acceptable with regard to the supporting data. 1,1,1-trichloroethane (13 ppb) was rejected (R) from the MS since it was not duplicated in the sample, field duplicate, or MSD.

## XI. Tentatively Identified Compounds

No TICs were detected.

## XII. System Performance

System performance requires attention. Manual integrations should be addressed. All samples exceeded the required holding time.

## XIII. Overall Assessment of Data for a Case

All aromatic compounds were qualified as estimates.

1,1,1-Trichloroethane was rejected in the MS analysis.

## VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE

Contract:

S1-8

00020

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3179

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2581

Level: (low/med) LOW

Date Received: 5/ 5/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	120.	U
74-83-9	-----Bromomethane	120.	U
75-01-4	-----Vinyl Chloride	120.	U
75-00-3	-----Chloroethane	120.	U
75-09-2	-----Methylene Chloride	62.	U
67-64-1	-----Acetone	120.	U
75-15-0	-----Carbon Disulfide	62.	U
75-35-4	-----1,1-Dichloroethene	62.	U
75-34-3	-----1,1-Dichloroethane	62.	U
540-59-0	-----1,2-Dichloroethene (total)	62.	U
67-66-3	-----Chloroform	62.	U
107-06-2	-----1,2-Dichloroethane	62.	U
78-93-3	-----2-Butanone	120.	U
71-55-6	-----1,1,1-Trichloroethane	62.	U
56-23-5	-----Carbon Tetrachloride	62.	U
108-05-4	-----Vinyl Acetate	120.	U
75-27-4	-----Bromodichloromethane	62.	U
78-87-5	-----1,2-Dichloropropane	62.	U
10061-01-5	-----cis-1,3-Dichloropropene	62.	U
79-01-6	-----Trichloroethene	62.	U
124-48-1	-----Dibromochloromethane	62.	U
79-00-5	-----1,1,2-Trichloroethane	62.	U
71-43-2	-----Benzene	62.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	62.	U
75-25-2	-----Bromoform	62.	U
108-10-1	-----4-methyl-2-Pentanone	120.	U
591-78-6	-----2-Hexanone	120.	U
127-18-4	-----Tetrachloroethene	1900.	
79-34-5	-----1,1,2,2-Tetrachloroethane	62.	U
108-88-3	-----Toluene	62.	UJ
108-90-7	-----Chlorobenzene	62.	UJ
100-41-4	-----Ethylbenzene	62.	UJ
100-42-5	-----Styrene	62.	UJ
1330-20-7	-----Xylene (total)	62.	UJ

## TENTATIVELY IDENTIFIED COMPOUNDS

S1-8

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00021

Matrix: (soil/water) WATER

Lab Sample ID: 3179

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2581

Level: (low/med) LOW

Date Received: 5/ 5/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pac)/cap) PACK

Dilution Factor: 12.50

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-8DUP

00026

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3181

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2584

Level: (low/med) LOW

Date Received: 5/ 5/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	120.	U
74-83-9	-----Bromomethane	120.	U
75-01-4	-----Vinyl Chloride	120.	U
75-00-3	-----Chloroethane	120.	U
75-09-2	-----Methylene Chloride	62.	U
67-64-1	-----Acetone	120.	U
75-15-0	-----Carbon Disulfide	62.	U
75-35-4	-----1,1-Dichloroethene	62.	U
75-34-3	-----1,1-Dichloroethane	62.	U
540-59-0	-----1,2-Dichloroethene (total)	62.	U
67-66-3	-----Chloroform	62.	U
107-06-2	-----1,2-Dichloroethane	62.	U
78-93-3	-----2-Butanone	120.	U
71-55-6	-----1,1,1-Trichloroethane	62.	U
56-23-5	-----Carbon Tetrachloride	62.	U
108-05-4	-----Vinyl Acetate	120.	U
75-27-4	-----Bromodichloromethane	62.	U
78-87-5	-----1,2-Dichloropropane	62.	U
10061-01-5	-----cis-1,3-Dichloropropene	62.	U
79-01-6	-----Trichloroethene	62.	U
124-48-1	-----Dibromochloromethane	62.	U
79-00-5	-----1,1,2-Trichloroethane	62.	U
71-43-2	-----Benzene	62.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	62.	U
75-25-2	-----Bromoform	62.	U
108-10-1	-----4-methyl-2-Pentanone	120.	U
591-78-6	-----2-Hexanone	120.	U
127-18-4	-----Tetrachloroethene	1700.	
79-34-5	-----1,1,2,2-Tetrachloroethane	62.	U
108-88-3	-----Toluene	62.	UJ
108-90-7	-----Chlorobenzene	62.	UJ
100-41-4	-----Ethylbenzene	62.	UJ
100-42-5	-----Styrene	62.	UJ
1330-20-7	-----Xylene (total)	62.	UJ

## TENTATIVELY IDENTIFIED COMPOUNDS

S1-8DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00027

Matrix: (soil/water) WATER

Lab Sample ID: 3181

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2584

Level: (low/med) LOW

Date Received: 5/ 5/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

Number TICs found: 0

CONCENTRATION UNITS:

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-8TB

00032

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3182

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2593

Level: (low/med) LOW

Date Received: 5/ 5/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	UG/L
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	2.	J
67-64-1	Acetone	7.	BJ
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	UJ
10061-02-6	Trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	UJ
108-90-7	Chlorobenzene	5.	UJ
100-41-4	Ethylbenzene	5.	UJ
100-42-5	Styrene	5.	UJ
1330-20-7	Xylene (total)	5.	UJ

## TENTATIVELY IDENTIFIED COMPOUNDS

31-BTB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00033

Matrix: (soil/water) WATER

Lab Sample ID: 3182

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2593

Level: (low/med) LOW

Date Received: 5/ 5/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

S2-6

Lab Name: PACE

Contract:

00039

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3184

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2594

Level: (low/med) LOW

Date Received: 5/ 5/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	UG/L
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	35.	
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	UJ
108-90-7	-----Chlorobenzene	5.	UJ
100-41-4	-----Ethylbenzene	5.	UJ
100-42-5	-----Styrene	5.	UJ
1330-20-7	-----Xylene (total)	5.	UJ

## TENTATIVELY IDENTIFIED COMPOUNDS

32-6

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00040

Matrix: (soil/water) WATER

Lab Sample ID: 3184

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2594

Level: (low/med) LOW

Date Received: 5/ 5/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

S4-6

00045

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3186

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2586

Level: (low/med) LOW

Date Received: 5/ 5/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACT

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane -----	50.	U
74-83-9	-----Bromomethane -----	50.	U
75-01-4	-----Vinyl Chloride -----	50.	U
75-00-3	-----Chloroethane -----	50.	U
75-09-2	-----Methylene Chloride -----	25.	U
67-64-1	-----Acetone -----	50.	U
75-15-0	-----Carbon Disulfide -----	25.	U
75-35-4	-----1,1-Dichloroethene -----	25.	U
75-34-3	-----1,1-Dichloroethane -----	25.	U
540-59-0	-----1,2-Dichloroethene (total) -----	25.	U
67-66-3	-----Chloroform -----	25.	U
107-06-2	-----1,2-Dichloroethane -----	25.	U
78-93-3	-----2-Butanone -----	50.	U
71-55-6	-----1,1,1-Trichloroethane -----	25.	U
56-23-5	-----Carbon Tetrachloride -----	25.	U
108-05-4	-----Vinyl Acetate -----	50.	U
75-27-4	-----Bromodichloromethane -----	25.	U
78-87-5	-----1,2-Dichloropropane -----	25.	U
10061-01-5	-----cis-1,3-Dichloropropene -----	25.	U
79-01-6	-----Trichloroethene -----	25.	U
124-48-1	-----Dibromochloromethane -----	25.	U
79-00-5	-----1,1,2-Trichloroethane -----	25.	U
71-43-2	-----Benzene -----	25.	U
10061-02-6	-----Trans-1,3-Dichloropropene -----	25.	U
75-25-2	-----Bromoform -----	25.	U
108-10-1	-----4-Methyl-2-Pentanone -----	50.	U
591-78-6	-----2-Hexanone -----	50.	U
127-18-4	-----Tetrachloroethene -----	850.	
79-34-5	-----1,1,2,2-Tetrachloroethane -----	25.	U
108-88-3	-----Toluene -----	25.	U
108-90-7	-----Chlorobenzene -----	25.	U
100-41-4	-----Ethylbenzene -----	25.	U
100-42-5	-----Styrene -----	25.	U
1330-20-7	-----Xylene (total) -----	25.	U

TENTATIVELY IDENTIFIED COMPOUNDS

34-6

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00046

Matrix: (soil/water) WATER

Lab Sample ID: 3186

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2586

Level: (low/med) LOW

Date Received: 5/ 5/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
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25.				
26.				
27.				
28.				
29.				
30.				

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/5/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

All positive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds and the internal standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Five treatment system samples were collected and submitted to PACE, Inc. on May 5, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-8FB	3180	05/05/91
S3-6	3185	05/05/91
S6-8	3187	05/05/91
S6-8DUP	3188	05/05/91
S6-8TB	3189	05/05/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



## **I. Holding Times**

All samples were analyzed outside the 7-day holding time but within the 14-day holding time for nonpreserved samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Areas were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

### **A. Initial**

Initial calibration criteria were met on 5/16/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/17/91 and 5/18/91.

## **IV. Blanks**

The trip blank, field blank, and method blanks were clean.

## **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

## **VI. Matrix Spike/Matrix Spike Duplicate**

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-8. The percent recovery for 1,1-dichloroethene was below QC criteria in the MS. The percent recovery for benzene was below QC criteria in the MSD. The

relative percent difference for 1,1-dichloroethene was above QC criteria. No positive results for these compounds were reported, so no data were qualified.

#### VII. Field Duplicates

Samples S6-8 and S6-8DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07

<u>Compound</u>	<u>MDL (ug/L)</u>
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The result reported for tetrachloroethene in Sample S3-6 (230 ug/L) was well beyond the calibration range of the instrument (25 ug/L). This result was qualified as estimated. This sample should have been submitted for CLP volatile organics analyses.

All other results and detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

Two TICs were reported in the trip blank at retention times of 9.38 and 11.35. These TICs were rejected. No other TICs were reported for this sample delivery group.

#### **XII. System Performance**

System performance was acceptable.

#### **XIII. Overall Assessment of Data for a Case**

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

00040

Unifirst

PACE Project Number: 810505500

PACE Sample Number:

95 0031880

Date Collected:

05/05/91

Date Received:

05/05/91

ParameterUnitsMDLS6-8 DupORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810505500

PACE Sample Number:

95 0031805

Date Collected:

05/05/91

Date Received:

05/05/91

ParameterUnitsMDLSI-8 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND uJ
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

( 0028

Unifirst

PACE Project Number: 810505500

PACE Sample Number:

95 0037955

Date Collected:

05/05/97

Date Received:

05/05/97

ParameterUnitsMDL

S3-6

ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND uJ
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	5.0 J
Chloroform	ug/L	0.5	ND uJ
1,2-Dichloroethane	ug/L	0.5	ND uJ
1,1,1-Trichloroethane	ug/L	0.5	10.0 J
Carbon tetrachloride	ug/L	0.5	ND uJ
Bromodichloromethane	ug/L	0.5	ND uJ
1,2-Dichloropropane	ug/L	0.5	ND uJ
cis-1,3-Dichloropropene	ug/L	0.5	ND uJ
Trichloroethene	ug/L	0.5	10.0 J
Dibromochloromethane	ug/L	0.5	ND uJ
1,1,2-Trichloroethane	ug/L	0.5	ND uJ
Benzene	ug/L	0.5	ND uJ
trans-1,3-Dichloropropene	ug/L	0.5	ND uJ
Bromoform	ug/L	0.5	ND uJ
Tetrachloroethene	ug/L	0.5	230 J
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND uJ
Toluene	ug/L	0.5	ND uJ
Chlorobenzene	ug/L	0.5	ND uJ
Ethyl benzene	ug/L	0.5	ND uJ
Xylene, total	ug/L	0.5	ND uJ

MDL Method Detection Limit

ND Not detected at or above the MDL.

00036

Unifirst

PACE Project Number: 810505500

PACE Sample Number:

95 0031872

Date Collected:

05/05/91

Date Received:

05/05/91

ParameterUnitsMDLS6-8ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

00040

Unifirst

PACE Project Number: 810505500

PACE Sample Number:

95 0031880

Date Collected:

05/05/91

Date Received:

05/05/91

ParameterUnitsMDLS6-8 DupORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	uJ
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL Method Detection Limit

ND Not detected at or above the MDL.



00044

Unifirst

PACE Project Number: 810505500

PACE Sample Number:

95 0031899

Date Collected:

05/05/91

Date Received:

05/05/91

ParameterUnitsMDLS6-8 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND u)
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

00047

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

56-8 TB

Lab Name: \_\_\_\_\_ Contract: \_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) \_\_\_\_\_ Lab Sample ID: \_\_\_\_\_

Sample wt/vol: \_\_\_\_\_ (g/mL) \_\_\_\_\_ Lab File ID: \_\_\_\_\_

Level: (low/med) \_\_\_\_\_ Date Received: \_\_\_\_\_

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: \_\_\_\_\_

Column: (pack/cap) \_\_\_\_\_ Dilution Factor: \_\_\_\_\_

Number TICs found: \_\_\_\_\_ CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Acetone Unknown Aliphatic	9.38	205 R	
2.	Unknown Aliphatic	11.35	64 R	
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
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23.				
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28.				
29.				
30.				

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/6/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Tetrachloroethene was the only target compound list (TCL) compound detected above the detection limit. No tentatively identified compounds (TICs) were detected.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Six treatment system samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 6, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-9	3205	05/06/91
S1-9Dup	3206	05/06/91
S1-9TB	3207	05/06/91
S4-7	3212	05/06/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

#### **I. Holding Times**

Since samples were analyzed outside the 7 day holding time for non-preserved samples but within the 14 day holding time, detection limits for aromatic compounds were estimated.

#### **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

#### **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

##### **A. Initial**

Initial calibration criteria were met.

##### **B. Continuing**

Continuing calibration criteria were met with the exception of the % difference for 2-butanone (actual 30.7-criteria 25) on May 13, 1991 and 2-butanone (actual 36.6-criteria 25) on May 14, 1991. The data were not affected.

#### **IV. Blanks**

No contamination was found in the trip blank or in VBLK01. Acetone was detected in VBLK02 (1J). The data were not affected.

#### **V. Surrogate Recovery**

All surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.

## VII. Field Duplicates

Tetrachloroethene was detected in the sample at 1800 ppb, the field duplicate at 2200 ppb, in the MS at 2100 ppb, and in the MSD at 2000 ppb (RSD 8.4). The data are acceptable.

## VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

Target compounds were properly identified.

## X. Compound Quantitation and Reported Detection Limits

Detection limits were acceptable with regard to the supporting data. Trichloroethene (S1-9) and 1,1,1-trichloroethane (S1-9 Dup) were rejected (R). Trichloroethene was not duplicated in the field duplicate, MS, or MSD and 1,1,1-trichloroethane was not duplicated in the sample, MS or MSD.

## XI. Tentatively Identified Compounds

No TICs were detected.

## XII. System Performance

System performance requires attention. Manual integrations should be addressed. All sample analyses exceeded the required holding times.

## XIII. Overall Assessment of Data for a Case

All aromatic compounds were qualified as estimates.

Trichloroethene was rejected in Sample S1-9.

1,1,1-Trichloroethane was rejected in Sample S1-9DUP.



## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-9

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No. 0020

Matrix: (soil/water) WATER

Lab Sample ID: 3205

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2595

Level: (low/med) LOW

Date Received: 5/ 7/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	Chloromethane	120.	U
74-83-9	Bromomethane	120.	U
75-01-4	Vinyl Chloride	120.	U
75-00-3	Chloroethane	120.	U
75-09-2	Methylene Chloride	62.	U
67-64-1	Acetone	120.	U
75-15-0	Carbon Disulfide	62.	U
75-35-4	1,1-Dichloroethene	62.	U
75-34-3	1,1-Dichloroethane	62.	U
540-59-0	1,2-Dichloroethene (total)	62.	U
67-66-3	Chloroform	62.	U
107-06-2	1,2-Dichloroethane	62.	U
78-93-3	2-Butanone	120.	U
71-55-6	1,1,1-Trichloroethane	62.	U
56-23-5	Carbon Tetrachloride	62.	U
108-05-4	Vinyl Acetate	120.	U
75-27-4	Bromodichloromethane	62.	U
78-87-5	1,2-Dichloropropane	62.	U
10061-01-5	cis-1,3-Dichloropropene	62.	U
79-01-6	Trichloroethene	62.	U
124-48-1	Dibromochloromethane	62.	U
79-00-5	1,1,2-Trichloroethane	62.	U
71-43-2	Benzene	62.	U
10061-02-6	Trans-1,3-Dichloropropene	62.	U
75-25-2	Bromoform	62.	U
108-10-1	4-Methyl-2-Pentanone	120.	U
591-78-6	2-Hexanone	120.	U
127-18-4	Tetrachloroethene	1800.	U
79-34-5	1,1,2,2-Tetrachloroethane	62.	U
108-88-3	Toluene	62.	U
108-90-7	Chlorobenzene	62.	U
100-41-4	Ethylbenzene	62.	U
100-42-5	Styrene	62.	U
1330-20-7	Xylene (total)	62.	U

## TENTATIVELY IDENTIFIED COMPOUNDS

S1-9

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00021

Matrix: (soil/water) WATER

Lab Sample ID: 3205

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2595

Level: (low/med) LOW

Date Received: 5/ 7/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

S1-9DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00027

Matrix: (soil/water) WATER

Lab Sample ID: 3206

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2596

Level: (low/med) LOW

Date Received: 5/ 7/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	120.	U
74-83-9	-----Bromomethane	120.	U
75-01-4	-----Vinyl Chloride	120.	U
75-00-3	-----Chloroethane	120.	U
75-09-2	-----Methylene Chloride	62.	U
67-64-1	-----Acetone	120.	U
75-15-0	-----Carbon Disulfide	62.	U
75-35-4	-----1,1-Dichloroethene	62.	U
75-34-3	-----1,1-Dichloroethane	62.	U
540-59-0	-----1,2-Dichloroethene (total)	62.	U
67-66-3	-----Chloroform	62.	U
107-06-2	-----1,2-Dichloroethane	62.	U
78-93-3	-----2-Butanone	120.	U
71-55-6	-----1,1,1-Trichloroethane	18.	U <i>SR</i>
56-23-5	-----Carbon Tetrachloride	62.	U
108-05-4	-----Vinyl Acetate	120.	U
75-27-4	-----Bromodichloromethane	62.	U
78-87-5	-----1,2-Dichloropropane	62.	U
10061-01-5	-----cis-1,3-Dichloropropene	62.	U
79-01-6	-----Trichloroethene	62.	U
124-48-1	-----Dibromochloromethane	62.	U
79-00-5	-----1,1,2-Trichloroethane	62.	U
71-43-2	-----Benzene	62.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	62.	U
75-25-2	-----Bromoform	62.	U
108-10-1	-----4-Methyl-2-Pentanone	120.	U
591-78-6	-----2-Hexanone	120.	U
127-18-4	-----Tetrachloroethene	2200.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	62.	U
108-88-3	-----Toluene	62.	UJ
108-90-7	-----Chlorobenzene	62.	UJ
100-41-4	-----Ethylbenzene	62.	UJ
100-42-5	-----Styrene	62.	UJ
1330-20-7	-----Xylene (total)	62.	UJ

TENTATIVELY IDENTIFIED COMPOUNDS

51-9DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00028

Matrix: (soil/water) WATER

Lab Sample ID: 3206

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2596

Level: (low/med) LOW

Date Received: 5/ 7/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

S1-9 TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00034

Matrix: (soil/water) WATER

Lab Sample ID: 3208

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2588

Level: (low/med) LOW

Date Received: 5/ 7/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	UJ
108-90-7	-----Chlorobenzene	5.	UJ
100-41-4	-----Ethylbenzene	5.	UJ
100-42-5	-----Styrene	5.	UJ
1330-20-7	-----Xylene (total)	5.	UJ

## TENTATIVELY IDENTIFIED COMPOUNDS

31-9 TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00035

Matrix: (soil/water) WATER

Lab Sample ID: 3208

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2588

Level: (low/med) LOW

Date Received: 5/ 7/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S4-7

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3212

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2597

Level: (low/med) LOW

Date Received: 5/ 7/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

## CONCENTRATION UNITS:

(ug/L or ug/kg) UG/L

0

CAS NO.

COMPOUND

74-87-3	-----Chloromethane	50.	U
74-83-9	-----Bromomethane	50.	U
75-01-4	-----Vinyl Chloride	50.	U
75-00-3	-----Chloroethane	50.	U
75-09-2	-----Methylene Chloride	25.	U
67-64-1	-----Acetone	50.	U
75-15-0	-----Carbon Disulfide	25.	U
75-35-4	-----1,1-Dichloroethene	25.	U
75-34-3	-----1,1-Dichloroethane	25.	U
540-59-0	-----1,2-Dichloroethene (total)	10	U
67-66-3	-----Chloroform	25.	U
107-06-2	-----1,2-Dichloroethane	25.	U
78-93-3	-----2-Butanone	50.	U
71-55-6	-----1,1,1-Trichloroethane	10.	J
56-23-5	-----Carbon Tetrachloride	25.	U
108-05-4	-----Vinyl Acetate	50.	U
75-27-4	-----Bromodichloromethane	25.	U
78-87-5	-----1,2-Dichloropropane	25.	U
10061-01-5	-----cis-1,3-Dichloropropene	25.	U
79-01-6	-----Trichloroethene	18.	J
124-48-1	-----Dibromochloromethane	25.	U
79-00-5	-----1,1,2-Trichloroethane	25.	U
71-43-2	-----Benzene	25.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	25.	U
75-25-2	-----Bromoform	25.	U
108-10-1	-----4-methyl-2-Pentanone	50.	U
591-78-6	-----2-Hexanone	50.	U
127-18-4	-----Tetrachloroethene	870.	
79-34-5	-----1,1,2,2-Tetrachloroethane	25.	U
108-88-3	-----Toluene	25.	UJ
108-90-7	-----Chlorobenzene	25.	UJ
100-41-4	-----Ethylbenzene	25.	UJ
100-42-5	-----Styrene	25.	UJ
1330-20-7	-----Xylene (total)	25.	UJ

UJ  
6/14/91

## TENTATIVELY IDENTIFIED COMPOUNDS

54-7

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00040

Matrix: (soil/water) WATER

Lab Sample ID: 3212

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2597

Level: (low/med) LOW

Date Received: 5/ 7/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/6/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

All positive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds and the internal standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

Foaming of the samples occurred during analysis of all samples except the field blank and the trip blank.

Chain of custody form No. 22895 was not signed by the sampler.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Six treatment system samples were collected and submitted to PACE, Inc. on May 6, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-9FB	3207	05/06/91
S2-7	3209	05/06/91
S3-7	3210	05/06/91
S6-9	3213	05/06/91
S6-9DUP	3214	05/06/91
S6-9TB	3215	05/06/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples were analyzed outside the 7-day holding time but within the 14-day holding time for nonpreserved samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Areas were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

### **A. Initial**

Initial calibration criteria were met on 5/16/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/17/91, 5/18/91, and 5/19/91.

## **IV. Blanks**

The trip blank, field blank, and method blanks were clean.

## **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

## **VI. Matrix Spike/Matrix Spike Duplicate**

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-9. The percent recoveries for 1,1-dichloroethene, trichloroethene, and benzene were below QC criteria in the MS and the MSD. The percent recovery for toluene

was below QC criteria in the MS. No positive results for those compounds were detected, so no data were qualified. However, these results were extremely poor.

#### VII. Field Duplicates

Samples S6-9 and S6-9DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

The compound 1,1-dichloroethene was reported in Sample S3-7. The spectra provided for the compound in the sample does not match that of 1,1-dichloroethene. The compound 1,1-dichloroethene was rejected from Sample S3-7 based on this incorrect identification.

All other TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45

<u>Compound</u>	<u>MDL (ug/L)</u>
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The result reported for tetrachloroethene in Samples S2-7 (53 ug/L) and S3-7 (340 ug/L) were well beyond the calibration range of the instrument (25 ug/L). These results for tetrachloroethene were qualified as estimated. Samples S2-7 and S3-7 should not have been submitted for Method 524.2 analyses.

All reported results for Sample S3-7 were quantified incorrectly. Correct results are as follows:

<u>Compound</u>	<u>Corrected Result (ug/L)</u>
cis-1,2-Dichloroethene	8.9
1,1,1-Trichloroethane	15.7
Trichloroethene	14.4
Tetrachloroethene	342

All other results and detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

#### XII. System Performance

System performance was acceptable.

### XIII. Overall Assessment of Data for a Case

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

Results for Sample S3-7 were quantified incorrectly by the laboratory. Corrections have been made to the Form I which is included with this validation report.

Due to missed holding times on all samples, detection limits for all aromatic compounds have been qualified as estimated.

Results for tetrachloroethene in Samples S2-7 and S3-7 were qualified as estimated since the reported values exceeded the calibration range of the instrument.

1,1-Dichloroethene in Sample S3-7 was rejected as a false positive.



00026

Unifirst

PACE Project Number: 810507501

PACE Sample Number:

95 0032070

Date Collected:

05/06/91

Date Received:

05/07/91

ParameterUnitsMDLS1-9 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	us exp 7/6/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00030

Unifirst

PACE Project Number: 810507501

PACE Sample Number:

95 0032097

Date Collected:

05/06/91

Date Received:

05/07/91

ParameterUnitsMDLS2-7ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND <i>u</i> <i>EXD</i>
Chloroethane	ug/L	0.5	ND <i>u</i> <i>1/6/91</i>
Methylene chloride	ug/L	0.5	ND <i>u</i>
1,1-Dichloroethene	ug/L	0.5	ND <i>u</i>
1,1-Dichloroethane	ug/L	0.5	ND <i>u</i>
trans-1,2-Dichloroethene	ug/L	0.5	ND <i>u</i>
cis-1,2-Dichloroethene	ug/L	0.5	1.4 <i>u</i>
Chloroform	ug/L	0.5	ND <i>u</i>
1,2-Dichloroethane	ug/L	0.5	ND <i>u</i>
1,1,1-Trichloroethane	ug/L	0.5	1.7 <i>u</i>
Carbon tetrachloride	ug/L	0.5	ND <i>u</i>
Bromodichloromethane	ug/L	0.5	ND <i>u</i>
1,2-Dichloropropane	ug/L	0.5	ND <i>u</i>
cis-1,3-Dichloropropene	ug/L	0.5	ND <i>u</i>
Trichloroethene	ug/L	0.5	2.4 <i>u</i>
Dibromochloromethane	ug/L	0.5	ND <i>u</i>
1,1,2-Trichloroethane	ug/L	0.5	ND <i>u</i>
Benzene	ug/L	0.5	ND <i>u</i>
trans-1,3-Dichloropropene	ug/L	0.5	ND <i>u</i>
Bromoform	ug/L	0.5	ND <i>u</i>
Tetrachloroethene	ug/L	0.5	53 <i>u</i>
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND <i>u</i>
Toluene	ug/L	0.5	ND <i>u</i>
Chlorobenzene	ug/L	0.5	ND <i>u</i>
Ethyl benzene	ug/L	0.5	ND <i>u</i>
Xylene, total	ug/L	0.5	ND <i>u</i>

MDL Method Detection Limit

ND Not detected at or above the MDL.

00038

Unifirst

PACE Project Number: 810507501

PACE Sample Number:

95 0032100

Date Collected:

05/06/91

Date Received:

05/07/91

ParameterUnitsMDLS3-7ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND <i>u</i>	<i>Exd 7/6/91</i>
Chloroethane	ug/L	0.5	ND <i>u</i>	
Methylene chloride	ug/L	0.5	ND <i>u</i>	
1,1-Dichloroethene	ug/L	0.5	<del>2.8</del> <i>R</i>	
1,1-Dichloroethane	ug/L	0.5	ND <i>u</i>	
trans-1,2-Dichloroethene	ug/L	0.5	ND <i>u</i>	
cis-1,2-Dichloroethene	ug/L	0.5	<del>2.5</del> <i>8.9 J</i>	
Chloroform	ug/L	0.5	ND <i>u</i>	
1,2-Dichloroethane	ug/L	0.5	ND <i>u</i>	
1,1,1-Trichloroethane	ug/L	0.5	<del>3.6</del> <i>15.7 J</i>	
Carbon tetrachloride	ug/L	0.5	ND <i>u</i>	
Bromodichloromethane	ug/L	0.5	ND <i>u</i>	
1,2-Dichloropropane	ug/L	0.5	ND <i>u</i>	
cis-1,3-Dichloropropene	ug/L	0.5	ND <i>u</i>	
Trichloroethene	ug/L	0.5	<del>3.8</del> <i>14.4 J</i>	
Dibromochloromethane	ug/L	0.5	ND <i>u</i>	
1,1,2-Trichloroethane	ug/L	0.5	ND <i>u</i>	
Benzene	ug/L	0.5	ND <i>u</i>	
trans-1,3-Dichloropropene	ug/L	0.5	ND <i>u</i>	
Bromoform	ug/L	0.5	ND <i>u</i>	
Tetrachloroethene	ug/L	0.5	<del>400</del> <i>340 J</i>	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND <i>u</i>	
Toluene	ug/L	0.5	ND <i>u</i>	
Chlorobenzene	ug/L	0.5	ND <i>u</i>	
Ethyl benzene	ug/L	0.5	ND <i>u</i>	
Xylene, total	ug/L	0.5	ND <i>u</i>	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00047

Unifirst

PACE Project Number: 810507501

PACE Sample Number:

95 0032135

Date Collected:

05/06/91

Date Received:

05/07/91

ParameterUnitsMDLS6-9ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	u) LLA 7/6/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810507501

PACE Sample Number:

95 0032143

Date Collected:

05/06/91

Date Received:

05/07/91

ParameterUnitsMDLS6-9 DupORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	u.s. 8/2/91 7/10/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL Method Detection Limit

ND Not detected at or above the MDL.

00055

Unifirst

PACE Project Number: 810507501

PACE Sample Number:

95 0032151

Date Collected:

05/06/91

Date Received:

05/07/91

ParameterUnitsMDLS6-9 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

ws EKS 7/6/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
INORGANIC ANALYSES DATA

Samples Collected 5/6/91

Chemical Analyses Performed By  
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Metals analytical data presented for this sample delivery group were satisfactory. Some of the data were qualified as estimated. All unqualified positive sample data may be used without reservation.

One of the chain of custody forms submitted with these samples was not signed by the sampler.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).



UJ - The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

## CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
- IX. ICP Serial Dilution Analysis
- X. Detection Limits
- XI. Sample Result Verification
- XII. Overall Assessment

## Data Validation

### I. Holding Times

All metals analyses were conducted within acceptable holding times.

### II. Calibration

Calibrations for metals were satisfactory.

One of the standards analyzed to establish the calibration curve for AA must be at the CRDL. The CRDL for antimony is 60 ppb, and the highest standard analyzed was 45 ppb. Since antimony was not detected in any sample, data quality was not affected.

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of cadmium and silver, which had recoveries below QC limits, and chromium, which had recovered above QC limits. None of these compounds was detected in the samples; however, detection limits for cadmium, silver, and chromium were qualified as estimated in Samples S6-9, S1-9, and S1-9FB.

### III. Blanks

No preparation or calibration blanks were above the CRDLs or less than the negative CRDLs.

One calibration blank and Field Blank S1-9FB contained zinc at 3 and 25 ppb, respectively. Zinc was qualified as less than the reported value in Sample S6-9.

### IV. ICP Interference Check Sample

Interference check sample results were satisfactory.

### V. Matrix Spike Sample Analysis

Spike recoveries not meeting criteria are summarized below.

Sample	Analyte	Recovery (%)
S1-9	Arsenic	73.8
	Barium	55.0
	Thallium	63.6

Positive results and detection limits for arsenic, barium, and thallium were estimated (J).

#### **VI. Duplicate Sample Analysis**

Duplicate analyses results for metals were satisfactory with the exception of zinc. The relative percent difference between S1-9 and the duplicate was above QC limits. Detection limits and positive results for zinc were qualified as estimated in Samples S1-9, S1-9FB, and S6-9.

#### **VII. Laboratory Control Sample Analyses**

Laboratory control sample results were satisfactory.

#### **VIII. Furnace Atomic Absorption Analysis**

Duplicate injections were performed for all samples and agreed within  $\pm 20\%$ .

The method of standard additions was not required.

#### **IX. ICP Serial Dilution Analysis**

Serial dilutions were conducted on S1-9. All results met the validation criteria of 15%.

#### **X. Detection Limits**

Instrument detection limits (IDLs) should be less than the contract required detection limits (CRDLs). The IDL reported for mercury is equal to its CRDL. Mercury was not detected in any of the samples, so no data were qualified.

#### **XI. Sample Result Verification**

Sample results were acceptable as reported.

#### **XII. Overall Assessment**

Positive results and detection limits for arsenic, barium, cadmium, chromium, silver, thallium, and zinc were qualified as estimated in Samples S1-9, S1-9FB, and S6-9 for the reasons discussed above. All other metals data may be used without reservation.

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00015  
S1-9

Lab Name: PACE\_INCORPORATED\_\_\_\_\_ Contract: EPC\_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix (soil/water): WATER

Lab Sample ID: 3205.4\_\_\_\_\_

Level (low/med): LOW\_\_\_\_\_

Date Received: 05/07/91

Solids: \_\_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_\_\_\_\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U	IN	F
7440-39-3	Barium	19.0	B	IN	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U	J	P
7440-70-2	Calcium	88100			P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	7.0	B		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	0.70	B		F
7439-95-4	Magnesium	10900			P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	3060	B		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	J	P
7440-23-5	Sodium	97700			P
7440-28-0	Thallium	0.70	U	IN	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	243		J	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR\_\_\_\_\_ Texture: \_\_\_\_\_

Color After: COLORLESS Clarity After: CLEAR\_\_\_\_\_ Artifacts: \_\_\_\_\_

Comments:

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

S1-9 FB

~~00016~~

Lab Name: PACE\_INCORPORATED

Contract: EPC

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: \_\_\_\_\_

Matrix (soil/water): WATER

Lab Sample ID: 3207.0

Level (low/med): LOW

Date Received: 05/07/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U	J	F
7440-39-3	Barium	12.5	U	J	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U	J	P
7440-70-2	Calcium	448	U		P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	509	U		P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	760	U		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	J	P
7440-23-5	Sodium	390	U		P
7440-28-0	Thallium	0.70	U	J	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	25.0		J	P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR

Artifacts: \_\_\_\_\_

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE\_INCORPORATED Contract: EPC

S6-9

00017

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 3213.5

Level (low/med): LOW

Date Received: 05/07/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U	JN	F
7440-39-3	Barium	18.0	B	JN	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U	J	P
7440-70-2	Calcium	86800			P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	1.6	B		F
7439-95-4	Magnesium	10700			P
7439-96-5	Manganese	3.0	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	2310	B		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	J	P
7440-23-5	Sodium	93900			P
7440-28-0	Thallium	0.70	U	JN	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	121		U * J	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/7/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233



## EXECUTIVE SUMMARY

Data quality for this sample delivery group was excellent. These samples were apparently shipped via overnight courier; however, this information was not provided on the chain of custody forms. The chain of custody forms did not show that the samples were relinquished by the sampler.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Six samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 7, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-10	3232	05/07/91
S1-10 DUP	3233	05/07/91
S1-10 TB	3235	05/07/91
S4-8	3239	05/07/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples except S1-10MS and S1-10MSD were analyzed within the 7-day holding for nonpreserved samples. Samples S1-10MS and S1-10MSD were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimated in Samples S1-10MS and S1-10MSD.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### **A. Initial**

Initial calibration criteria were met on 4/24/91 (Instrument J).

### **B. Continuing**

Continuing calibration criteria were met on 5/14/91 with the exception of the % difference for chloromethane (actual 32.1; criteria 25) and 2-butanone (actual 39.9; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/13/91 with the exception of the % difference for chloromethane (actual 32.0; criteria 25) and 2-butanone (actual 38.9; criteria 25). Data were not affected.

## **IV. Blanks**

Methylene chloride was reported in the Method Blank VBLK1. No field samples were affected.

#### **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S1-10. Data were within acceptance criteria.

The compound 1,1,2,2-tetrachloroethane was reported in the matrix spike sample. Because this compound was not found in the field sample, duplicate, or the matrix spike duplicate, 1,1,2,2-tetrachloroethane in the matrix spike was rejected.

#### **VII. Field Duplicates**

Tetrachloroethene was reported in the Samples S1-10 and S1-10 DUP at 2200 ppb and 2100 ppb, respectively. Agreement was excellent and within QC criteria.

#### **VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

#### **IX. TCL Compound Identification**

TCL compound identifications were acceptable.

#### **X. Compound Quantitation and Reported Detection Limits**

Results and detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were reported for this SDG.

#### **XII. System Performance**

System performance was acceptable.

**XIII. Overall Assessment of Data for a Case**

Data quality for this sample delivery group was excellent.

1,1,2,2-Tetrachloroethane was rejected in Sample S1-10MS.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-10

00021

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3232

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2598

Level: (low/med) LOW

Date Received: 5/ 8/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	Chloromethane	120.	U
74-83-9	Bromomethane	120.	U
75-01-4	Vinyl Chloride	120.	U
75-00-3	Chloroethane	120.	U
75-09-2	Methylene Chloride	62.	U
67-64-1	Acetone	120.	U
75-15-0	Carbon Disulfide	62.	U
75-35-4	1,1-Dichloroethene	62.	U
75-34-3	1,1-Dichloroethane	62.	U
540-59-0	1,2-Dichloroethene (total)	62.	U
67-66-3	Chloroform	62.	U
107-06-2	1,2-Dichloroethane	62.	U
78-93-3	2-Butanone	120.	U
71-55-6	1,1,1-Trichloroethane	62.	U
56-23-5	Carbon Tetrachloride	62.	U
108-05-4	Vinyl Acetate	120.	U
75-27-4	Bromodichloromethane	62.	U
78-87-5	1,2-Dichloropropane	62.	U
10061-01-5	cis-1,3-Dichloropropene	62.	U
79-01-6	Trichloroethene	62.	U
124-48-1	Dibromochloromethane	62.	U
79-00-5	1,1,2-Trichloroethane	62.	U
71-43-2	Benzene	62.	U
10061-02-6	Trans-1,3-Dichloropropene	62.	U
75-15-2	Bromoform	62.	U
108-10-1	4-Methyl-2-Pentanone	120.	U
591-78-6	2-Hexanone	120.	U
127-18-4	Tetrachloroethene	2200.	
79-34-5	1,1,2,2-Tetrachloroethane	62.	U
108-88-3	Toluene	62.	U
108-90-7	Chlorobenzene	62.	U
100-41-4	Ethylbenzene	62.	U
100-42-5	Styrene	62.	U
1330-20-7	Xylene (total)	62.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-10

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00022

Matrix: (soil/water) WATER

Lab Sample ID: 3232

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2598

Level: (low/med) LOW

Date Received: 5/ 8/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACE

Dilution Factor: 12.50

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-1001B  
00027

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3233

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2599

Level: (low/med) LOW

Date Received: 5/ 8/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	120.	U
74-83-9	-----Bromomethane	120.	U
75-01-4	-----Vinyl Chloride	120.	U
75-00-3	-----Chloroethane	120.	U
75-09-2	-----Methylene Chloride	62.	U
67-64-1	-----Acetone	120.	U
75-15-0	-----Carbon Disulfide	62.	U
75-35-4	-----1,1-Dichloroethene	62.	U
75-34-3	-----1,1-Dichloroethane	62.	U
540-59-0	-----1,2-Dichloroethene (total)	62.	U
67-66-3	-----Chloroform	62.	U
107-06-2	-----1,2-Dichloroethane	62.	U
78-93-3	-----2-Butanone	120.	U
71-55-6	-----1,1,1-Trichloroethane	62.	U
56-23-5	-----Carbon Tetrachloride	62.	U
108-05-4	-----Vinyl Acetate	120.	U
75-27-4	-----Bromodichloromethane	62.	U
78-87-5	-----1,2-Dichloropropane	62.	U
10061-01-5	-----cis-1,3-Dichloropropene	62.	U
79-01-6	-----Trichloroethene	62.	U
124-48-1	-----Dibromochloromethane	62.	U
79-00-5	-----1,1,2-Trichloroethane	62.	U
71-43-2	-----Benzene	62.	U
10061-02-6	-----Trans-1,3-Dichloropropene	62.	U
75-25-2	-----Bromoform	62.	U
108-10-1	-----4-Methyl-2-Pentanone	120.	U
591-78-6	-----2-Hexanone	120.	U
127-18-4	-----Tetrachloroethene	2100.	
79-34-5	-----1,1,2,2-Tetrachloroethane	62.	U
108-88-3	-----Toluene	62.	U
108-90-7	-----Chlorobenzene	62.	U
100-41-4	-----Ethylbenzene	62.	U
100-42-5	-----Styrene	62.	U
1330-20-7	-----Xylene (total)	62.	U

6244 XU 6/13/91

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-10DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00028

Matrix: (soil/water) WATER

Lab Sample ID: 3233

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2599

Level: (low/med) LOW

Date Received: 5/ 8/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

51-10TB

00033

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3235

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2600

Level: (low/med) LOW

Date Received: 5/ 8/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

ENVIRONMENTAL ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

51-10TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00034

Matrix: (soil/water) WATER

Lab Sample ID: 3235

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2600

Level: (low/med) LOW

Date Received: 5/ 8/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

34-8

00038

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3239

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2601

Level: (low/med) LOW

Date Received: 5/ 8/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	50.	U
74-83-9	-----Bromomethane	50.	U
75-01-4	-----Vinyl Chloride	50.	U
75-00-3	-----Chloroethane	50.	U
75-09-2	-----Methylene Chloride	25.	U
67-64-1	-----Acetone	50.	U
75-15-0	-----Carbon Disulfide	25.	U
75-35-4	-----1,1-Dichloroethene	25.	U
75-34-3	-----1,1-Dichloroethane	25.	U
540-59-0	-----1,2-Dichloroethene (total)	6.	J
67-66-3	-----Chloroform	25.	U
107-06-2	-----1,2-Dichloroethane	25.	U
78-93-3	-----2-Butanone	50.	U
71-55-6	-----1,1,1-Trichloroethane	25.	U
56-23-5	-----Carbon Tetrachloride	25.	U
108-05-4	-----Vinyl Acetate	50.	U
75-27-4	-----Bromodichloromethane	25.	U
78-87-5	-----1,2-Dichloropropane	25.	U
10061-01-5	-----cis-1,3-Dichloropropene	25.	U
79-01-6	-----Trichloroethene	25.	J
124-48-1	-----Dibromochloromethane	25.	U
79-00-5	-----1,1,2-Trichloroethane	25.	U
71-43-2	-----Benzene	25.	U
10061-02-6	-----Trans-1,3-Dichloropropene	25.	U
75-25-2	-----Bromoform	25.	U
108-10-1	-----4-Methyl-2-Pentanone	50.	U
591-78-6	-----2-Hexanone	50.	U
127-18-4	-----Tetrachloroethene	1000.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	25.	U
108-88-3	-----Toluene	25.	U
108-90-7	-----Chlorobenzene	25.	U
100-41-4	-----Ethylbenzene	25.	U
100-42-5	-----Styrene	25.	U
1330-20-7	-----Xylene (total)	25.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

64-8

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00039

Matrix: (soil/water) WATER

Lab Sample ID: 3239

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2601

Level: (low/med) LOW

Date Received: 5/ 8/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/7/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

All positive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds and the internal standards. Documentation from the laboratory has been requested. What that documentation is received, this data package will be re-evaluated.

Foaming of the samples occurred during analysis of all samples except the field blank and the trip blank.

Chain of custody forms were not signed by the sampler and do not show that the samples were relinquished by the sampler.

All positive sample results were quantitated incorrectly by the laboratory. Corrections were made by the validator, and corrected copy of the Forms I are included with this validation report.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



### Case Narrative

Seven treatment system samples were collected and submitted to PACE, Inc. on May 7, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-10FB	3234	05/07/91
S2-8	3237	05/07/91
S3-8	3238	05/07/91
S5-5	3240	05/07/91
S6-10	3241	05/07/91
S6-10DUP	3242	05/07/91
S6-10TB	3243	05/07/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples were analyzed outside the 7-day holding time but within the 14-day holding time for nonpreserved samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Areas were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

### **A. Initial**

Initial calibration criteria were met on 5/16/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/19/91 (0:10), 5/19/91 (10:05), and 5/20/91.

## **IV. Blanks**

The trip blank, field blank, and method blanks were clean.

## **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

## **VI. Matrix Spike/Matrix Spike Duplicate**

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-10. The percent recoveries for 1,1-dichloroethene and benzene were below QC criteria in the MS and the MSD. No positive results for those compounds were detected, so no data were qualified.

## VII. Field Duplicates

Samples S6-10 and S6-10DUP were submitted as duplicate samples. No compounds were detected in either sample.

## VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

TCL compound identifications were acceptable.

## X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44

<u>Compound</u>	<u>MDL (ug/L)</u>
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The results reported for tetrachloroethene in Samples S2-8 (270 ug/L) and S3-8 (270 ug/L) were well beyond the calibration range of the instrument (25 ug/L). These results for tetrachloroethene were qualified as estimated. Samples S2-8 and S3-8 should not have been submitted for Method 524.2 analyses.

All reported results for Samples S2-8 and S3-8 were quantified incorrectly. Correct results are as follows:

<u>Compound</u>	<u>Corrected Result (ug/L)</u>
<b>S2-8</b>	
cis-1,2-Dichloroethene	3.8
1,1,1-Trichloroethane	5.6
Trichloroethene	7.6
Tetrachloroethene	270
<b>S3-8</b>	
cis-1,2-Dichloroethene	9.3
1,1,1-Trichloroethane	17
Trichloroethene	16
Tetrachloroethene	270

All other results and detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

#### XII. System Performance

System performance was acceptable.

#### XIII. Overall Assessment of Data for a Case

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

Results for Samples S2-8 and S3-8 were quantified incorrectly by the laboratory. Corrected have been made to the Form I which is included with this validation report.

Unifirst

PACE Project Number: 810508501

PACE Sample Number:

95 0032348

Date Collected:

05/07/91

Date Received:

05/08/91

Parameter

Units

MDL

SI-10 FB

ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	uJ, EK 7/6/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL Method Detection Limit

ND Not detected at or above the MDL.

Unifirst

PACE Project Number: 810508501

1.1.2

PACE Sample Number:

95 0032372

Date Collected:

05/07/91

Date Received:

05/08/91

ParameterUnitsMDLS2-8ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	uJ	2.8	1/6/91
Chloroethane	ug/L	0.5	ND			
Methylene chloride	ug/L	0.5	ND			
1,1-Dichloroethene	ug/L	0.5	ND			
1,1-Dichloroethane	ug/L	0.5	ND			
trans-1,2-Dichloroethene	ug/L	0.5	ND			
cis-1,2-Dichloroethene	ug/L	0.5	4.1	3.8	J	
Chloroform	ug/L	0.5	ND	uJ		
1,2-Dichloroethane	ug/L	0.5	ND	uJ		
1,1,1-Trichloroethane	ug/L	0.5	6.3	4.4	5.6	J
Carbon tetrachloride	ug/L	0.5	ND	uJ		
Bromodichloromethane	ug/L	0.5	ND	uJ		
1,2-Dichloropropane	ug/L	0.5	ND	uJ		
cis-1,3-Dichloropropene	ug/L	0.5	ND	uJ		
Trichloroethene	ug/L	0.5	8.3	5.6	7.6	J
Dibromochloromethane	ug/L	0.5	ND	uJ		
1,1,2-Trichloroethane	ug/L	0.5	ND			
Benzene	ug/L	0.5	ND			
trans-1,3-Dichloropropene	ug/L	0.5	ND	uJ		
Bromoform	ug/L	0.5	ND	uJ		
Tetrachloroethene	ug/L	0.5	300	270	J	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	uJ		
Toluene	ug/L	0.5	ND			
Chlorobenzene	ug/L	0.5	ND			
Ethyl benzene	ug/L	0.5	ND			
Xylene, total	ug/L	0.5	ND			

MDL Method Detection Limit

ND Not detected at or above the MDL.



Unifirst

PACE Project Number: 810508501

PACE Sample Number:

95 0032380

Date Collected:

05/07/91

Date Received:

05/08/91

ParameterUnitsMDLS3-8ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	u) 2x8 7/6/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	10	9.3 J
Chloroform	ug/L	0.5	ND	u)
1,2-Dichloroethane	ug/L	0.5	ND	u)
1,1,1-Trichloroethane	ug/L	0.5	19	17 J
Carbon tetrachloride	ug/L	0.5	ND	u)
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	17	16 J
Dibromochloromethane	ug/L	0.5	ND	u)
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	310	270 J
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	u)
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810508501

00047

PACE Sample Number:

95 0032402

Date Collected:

05/07/91

Date Received:

05/08/91

ParameterUnitsMDLS5-5ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

WJ EKD  
7/6/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810508501

00051

PACE Sample Number:

95 0032410

Date Collected:

05/07/91

Date Received:

05/08/91

ParameterUnitsMDLS6-10ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

WJ 2K 7/6/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810508501

00055

PACE Sample Number:

95 0032429

Date Collected:

05/07/91

Date Received:

05/08/91

ParameterUnitsMDLS6-10 DupORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	UJ
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL Method Detection Limit

ND Not detected at or above the MDL.

Unifirst

PACE Project Number: 810508501

00059

PACE Sample Number:

95 0032437

Date Collected:

05/07/91

Date Received:

05/08/91

ParameterUnitsMDLS6-10 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	u)
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
DRUM SAMPLING  
INORGANIC ANALYSES DATA

Samples Collected 5/7/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

The reported copper results were considered valid.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

Inorganic Data Validation  
for  
Environmental Project Control, Inc.  
Samples Collected 5/7/91

Case Narrative

This group contained two water samples. Both samples were analyzed for only copper.

Four other samples were listed on the cover page to account for the samples used for the matrix spike and duplicate that accompanied this data package. However, none of the documents (e.g., digestion log) to track these samples in the laboratory were included in the data package.

Samples validated in this report are noted below:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
DRUM 1	3245	5/7/91
DRUM 2	3244	5/7/91



The areas reviewed during validation are listed below.

**CLP Inorganics Data Validation**

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
- IX. ICP Serial Dilution Analysis
- X. Detection Limits
- XI. Sample Result Verification
- XII. Overall Assessment

## **Data Validation**

### **I. Holding Times**

Analyses were conducted within acceptable holding times.

### **II. Calibration**

Instrument calibration was satisfactory.

### **III. Blanks**

All blanks were satisfactory.

### **IV. ICP Interference Check Sample**

ICS results were satisfactory.

### **V. Matrix Spike Sample Analysis**

Matrix spike sample analysis was satisfactory although there is no reason to believe that the sample spiked was representative of the either Drum 1 or Drum 2.

### **VI. Duplicate Sample Analysis**

Duplicate sample analysis was satisfactory.

### **VII. Laboratory Control Sample Analysis**

LCS results were satisfactory.

### **VIII. Furnace Atomic Absorption Analysis**

No analyses in this data package were conducted by furnace AA.

### **IX. ICP Serial Dilution Analysis**

Serial dilution results were satisfactory although concentrations were not sufficiently high to be meaningful.

**X. Detection Limits**

The copper IDL was less than the CRDL.

**XI. Sample Result Verification**

Calculations were performed correctly.

**XII. Overall Assessment**

The reported copper results were considered valid.

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00012

DRUM 2

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 3244.5

Level (low/med): LOW

Date Received: 05/08/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum		-		NR
7440-36-0	Antimony		-		NR
7440-38-2	Arsenic		-		NR
7440-39-3	Barium		-		NR
7440-41-7	Beryllium		-		NR
7440-43-9	Cadmium		-		NR
7440-70-2	Calcium		-		NR
7440-47-3	Chromium		-		NR
7440-48-4	Cobalt		-		NR
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron		-		NR
7439-92-1	Lead		-		NR
7439-95-4	Magnesium		-		NR
7439-96-5	Manganese		-		NR
7439-97-6	Mercury		-		NR
7440-02-0	Nickel		-		NR
7440-09-7	Potassium		-		NR
7782-49-2	Selenium		-		NR
7440-22-4	Silver		-		NR
7440-23-5	Sodium		-		NR
7440-28-0	Thallium		-		NR
7440-62-2	Vanadium		-		NR
7440-66-6	Zinc		-		NR
	Cyanide		-		NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

000 b1RUM 1

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 3245.3

Level (low/med): LOW

Date Received: 05/08/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum		-		NR
7440-36-0	Antimony		-		NR
7440-38-2	Arsenic		-		NR
7440-39-3	Barium		-		NR
7440-41-7	Beryllium		-		NR
7440-43-9	Cadmium		-		NR
7440-70-2	Calcium		-		NR
7440-47-3	Chromium		-		NR
7440-48-4	Cobalt		-		NR
7440-50-8	Copper	6.0	-		P
7439-89-6	Iron		-		NR
7439-92-1	Lead		-		NR
7439-95-4	Magnesium		-		NR
7439-96-5	Manganese		-		NR
7439-97-6	Mercury		-		NR
7440-02-0	Nickel		-		NR
7440-09-7	Potassium		-		NR
7782-49-2	Selenium		-		NR
7440-22-4	Silver		-		NR
7440-23-5	Sodium		-		NR
7440-28-0	Thallium		-		NR
7440-62-2	Vanadium		-		NR
7440-66-6	Zinc		-		NR
	Cyanide		-		NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/8/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Tetrachloroethene was the only target compound list (TCL) compound detected above the detection limit. No tentatively identified compounds (TICs) were detected.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Six treatment system samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 8, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S4-9	3275	05/08/91
S1-11	3280	05/08/91
S1-11Dup	3281	05/08/91
S1-11TB	3283	05/08/91



## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

#### **I. Holding Times**

All samples were analyzed within holding times.

#### **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

#### **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

##### **A. Initial**

Initial calibration criteria were met.

##### **Continuing**

Continuing calibration criteria were met with the exception of the % difference for 2-butanone (actual 38.9 and 34.9-criteria 25) and chloromethane (actual 32 and 34.9-criteria 25). Both calibrations were analyzed on May 15, 1991. The data were not affected.

#### **IV. Blanks**

No contamination was detected in the trip or method blanks.

#### **V. Surrogate Recovery**

All surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.

#### **VII. Field Duplicates**

Tetrachloroethene was detected in the sample at 2400 ppb, the field duplicate at 1700 ppb, in the MS at 2200 ppb, and in the MSD at 2500 ppb (RSD 16). The data are acceptable.

#### **VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

#### **IX. TCL Compound Identification**

Target compounds were properly identified.

#### **X. Compound Quantitation and Reported Detection Limits**

Detection limits were acceptable with regard to the supporting data. Tetrachloroethene was reported in S4-9 at 1100 E ppb. This number can be used without reservation since it is not significantly outside of the calibration range.

#### **XI. Tentatively Identified Compounds**

No TICs were detected.

#### **XII. System Performance**

System performance was acceptable.

#### **XIII. Overall Assessment of Data for a Case**

Data quality for this SDG was good.

1A  
VOL ILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S4-9  
00020

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3275

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2612

Level: (low/med) LOW

Date Received: 5/ 9/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	0
---------	----------	--	---

74-87-3	-----Chloromethane	50.	U
74-83-9	-----Bromomethane	50.	U
75-01-4	-----Vinyl Chloride	50.	U
75-00-3	-----Chloroethane	50.	U
75-09-2	-----Methylene Chloride	25.	U
67-64-1	-----Acetone	50.	U
75-15-0	-----Carbon Disulfide	25.	U
75-35-4	-----1,1-Dichloroethene	25.	U
75-34-3	-----1,1-Dichloroethane	25.	U
540-59-0	-----1,2-Dichloroethene (total)	25.	U
67-66-3	-----Chloroform	25.	U
107-06-2	-----1,2-Dichloroethane	25.	U
78-93-3	-----2-Butanone	50.	U
71-55-6	-----1,1,1-Trichloroethane	15.	J
56-23-5	-----Carbon Tetrachloride	25.	U
108-05-4	-----Vinyl Acetate	50.	U
75-27-4	-----Bromodichloromethane	25.	U
78-87-5	-----1,2-Dichloropropane	25.	U
10061-01-5	-----cis-1,3-Dichloropropene	25.	U
79-01-6	-----Trichloroethene	25.	J
124-48-1	-----Dibromochloromethane	25.	U
79-00-5	-----1,1,2-Trichloroethane	25.	U
71-43-2	-----Benzene	25.	U
10061-02-6	-----Trans-1,3-Dichloropropene	25.	U
75-25-2	-----Bromoform	25.	U
108-10-1	-----4-Methyl-2-Pentanone	50.	U
591-78-6	-----2-Hexanone	50.	U
127-18-4	-----Tetrachloroethene	1100.	✓
79-34-5	-----1,1,2,2-Tetrachloroethane	25.	U
108-88-3	-----Toluene	25.	U
108-90-7	-----Chlorobenzene	25.	U
100-41-4	-----Ethylbenzene	25.	U
100-42-5	-----Styrene	25.	U
1330-20-7	-----Xylene (total)	25.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
 TENTATIVELY IDENTIFIED COMPOUNDS

S4-9

00021

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3275

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2612

Level: (low/med) LOW

Date Received: 5/ 9/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
 (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-11  
00028

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3280

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2625

Level: (low/med) LOW

Date Received: 5/ 9/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	0
---------	----------	--	---

74-87-3	-----Chloromethane	200.	U
74-83-9	-----Bromomethane	200.	U
75-01-4	-----Vinyl Chloride	200.	U
75-00-3	-----Chloroethane	200.	U
75-09-2	-----Methylene Chloride	100.	U
67-64-1	-----Acetone	200.	U
75-15-0	-----Carbon Disulfide	100.	U
75-35-4	-----1,1-Dichloroethene	100.	U
75-34-3	-----1,1-Dichloroethane	100.	U
540-59-0	-----1,2-Dichloroethene (total)	100.	U
67-66-3	-----Chloroform	100.	U
107-06-2	-----1,2-Dichloroethane	100.	U
78-93-3	-----2-Butanone	200.	U
71-55-6	-----1,1,1-Trichloroethane	100.	U
56-23-5	-----Carbon Tetrachloride	100.	U
108-05-4	-----Vinyl Acetate	200.	U
75-27-4	-----Bromodichloromethane	100.	U
78-87-5	-----1,2-Dichloropropane	100.	U
10061-01-5	-----cis-1,3-Dichloropropene	100.	U
79-01-6	-----Trichloroethene	100.	U
124-48-1	-----Dibromochloromethane	100.	U
79-00-5	-----1,1,2-Trichloroethane	100.	U
71-43-2	-----Benzene	100.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	100.	U
75-25-2	-----Bromoform	100.	U
108-10-1	-----4-Methyl-2-Pentanone	200.	U
591-78-6	-----2-Hexanone	200.	U
127-18-4	-----Tetrachloroethene	2400.	
79-34-5	-----1,1,2,2-Tetrachloroethane	100.	U
108-88-3	-----Toluene	100.	UJ
108-90-7	-----Chlorobenzene	100.	UJ
100-41-4	-----Ethylbenzene	100.	UJ
100-42-5	-----Styrene	100.	UJ
1330-20-7	-----Xylene (total)	100.	UJ

VOLATILE ORGANICS ANALYSIS DATA SHEET  
 TENTATIVELY IDENTIFIED COMPOUNDS

S1-11

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No. 00029

Matrix: (soil/water) WATER

Lab Sample ID: 3280

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2625

Level: (low/med) LOW

Date Received: 5/ 9/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
 (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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VOL TLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-11DUP

Lab Name: PACE

Contract:

00034

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3281

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2617

Level: (low/med) LOW

Date Received: 5/ 9/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	120.	U
74-83-9	-----Bromomethane	120.	U
75-01-4	-----Vinyl Chloride	120.	U
75-00-3	-----Chloroethane	120.	U
75-09-2	-----Methylene Chloride	62.	U
67-64-1	-----Acetone	120.	U
75-15-0	-----Carbon Disulfide	62.	U
75-35-4	-----1,1-Dichloroethene	62.	U
75-34-3	-----1,1-Dichloroethane	62.	U
540-59-0	-----1,2-Dichloroethene (total)	62.	U
67-66-3	-----Chloroform	62.	U
107-06-2	-----1,2-Dichloroethane	62.	U
78-93-3	-----2-Butanone	120.	U
71-55-6	-----1,1,1-Trichloroethane	62.	U
56-23-5	-----Carbon Tetrachloride	62.	U
108-05-4	-----Vinyl Acetate	120.	U
75-27-4	-----Bromodichloromethane	62.	U
78-87-5	-----1,2-Dichloropropane	62.	U
10061-01-5	-----cis-1,3-Dichloropropene	62.	U
79-01-6	-----Trichloroethene	62.	U
124-48-1	-----Dibromochloromethane	62.	U
79-00-5	-----1,1,2-Trichloroethane	62.	U
71-43-2	-----Benzene	62.	U
10061-02-6	-----Trans-1,3-Dichloropropene	62.	U
75-25-2	-----Bromoform	62.	U
108-10-1	-----4-Methyl-2-Pentanone	120.	U
591-78-6	-----2-Hexanone	120.	U
127-18-4	-----Tetrachloroethene	1700.	
79-34-5	-----1,1,2,2-Tetrachloroethane	62.	U
108-88-3	-----Toluene	62.	U
108-90-7	-----Chlorobenzene	62.	U
100-41-4	-----Ethylbenzene	62.	U
100-42-5	-----Styrene	62.	U
1330-20-7	-----Xylene (total)	62.	U



VOLATILE ORGANICS ANALYSIS DATA SHEET  
- TENTATIVELY IDENTIFIED COMPOUNDS

S1-11DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: **00035**

Matrix: (soil/water) WATER

Lab Sample ID: 3281

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2617

Level: (low/med) LOW

Date Received: 5/ 9/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOI ILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-11TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00040

Matrix: (soil/water) WATER

Lab Sample ID: 3283

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2611

Level: (low/med) LOW

Date Received: 5/ 9/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
 TENTATIVELY IDENTIFIED COMPOUNDS

S1-11TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00041

Matrix: (soil/water) WATER

Lab Sample ID: 3283

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2611

Level: (low/med) LOW

Date Received: 5/ 9/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
 (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/8/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

All positive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds and the internal standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

Positive sample results for Sample S5-6 were quantified incorrectly by the laboratory. Corrections were made by the validator, and a corrected copy of the Forms I is included with this validation report.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Five treatment system samples were collected and submitted to PACE, Inc. on May 8, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S5-6	3276	05/08/91
S6-11	3277	05/08/91
S6-11DUP	3278	05/08/91
S6-11TB	3279	05/08/91
S1-11FB	3282	05/08/91

Samples S2-9 and S3-9 were also submitted with the above samples for Method 524.2 analyses. Because of the high levels of tetrachloroethene in S2-9 and S3-9, these samples were analyzed pursuant to CLP methodology for volatile organic compounds.

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples except Sample S6-11 were analyzed outside the 7-day holding time but within the 14-day holding time for nonpreserved samples. Sample S6-11 was analyzed within the 7-day holding time. Detection limits for aromatic compounds were qualified as estimated for all samples except S6-11.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Peaks were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

### **A. Initial**

Initial calibration criteria were met on 5/11/91 and 5/16/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/19/91 and 5/20/91.

## **IV. Blanks**

The trip blank, field blank, and method blanks were clean.

## **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

## **VI. Matrix Spike/Matrix Spike Duplicate**

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-11. The relative percent differences for



1,1-dichloroethene and benzene were above QC criteria. No positive results for those compounds were detected, so no data were qualified.

#### VII. Field Duplicates

Samples S6-11 and S6-11DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

The compound 1,1-dichloroethene was reported in Sample S5-6. The spectrum provided does not match that of 1,1-dichloroethene. This compound was rejected from Sample S5-6.

All other TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42

<u>Compound</u>	<u>MDL (ug/L)</u>
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The result reported for tetrachloroethene in Sample S5-6 (62 ug/L) was beyond the calibration range of the instrument (25 ug/L). This result was qualified as estimated.

All reported results for Sample S5-6 were quantified incorrectly. Correct results are as follows:

<u>Compound</u>	<u>Corrected Result (ug/L)</u>
1,1-Dichloroethane	2.3
trans-1,2-Dichloroethene	0.38
cis-1,2-Dichloroethene	4.6
1,1,1-Trichloroethane	25
Trichloroethene	9.3
Tetrachloroethene	62

The result for trans-1,2-dichloroethene (0.38 ug/L) is below the PQL study-determined MDL. This result was reported as "ND."

All other results and detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

#### XII. System Performance

System performance was acceptable.

### **XIII. Overall Assessment of Data for a Case**

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

Results for Sample S5-6 were quantified incorrectly by the laboratory. Corrections have been made to the Form I which is included with this validation report.

00026

Unifirst

PACE Project Number: 810509500

PACE Sample Number:

95 0032763

Date Collected:

05/08/91

Date Received:

05/09/91

ParameterUnitsMDLS5-6ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND (u)	ECL 7/6/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	33 R	
1,1-Dichloroethane	ug/L	0.5	2.6 2.3	
trans-1,2-Dichloroethene	ug/L	0.5	.44 (J) ND	
cis-1,2-Dichloroethene	ug/L	0.5	5.0 4.6	
Chloroform	ug/L	0.5	ND (u)	
1,2-Dichloroethane	ug/L	0.5	ND (u)	
1,1,1-Trichloroethane	ug/L	0.5	27 25	
Carbon tetrachloride	ug/L	0.5	ND (u)	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	10 9.3	
Dibromochloromethane	ug/L	0.5	ND (u)	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	71 62	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND (u)	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL

(J)

Less than the MDL

Unifirst

PACE Project Number: 810509500

00057

PACE Sample Number:

95 0032771

Date Collected:

05/08/91

Date Received:

05/09/91

ParameterUnitsMDLS6-11ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

uJ 14.5  
7/14/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810509500

PACE Sample Number:

95 0032780

Date Collected:

05/08/91

Date Received:

05/09/91

ParameterUnitsMDLS6-11 DupORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

228  
7/6/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810509500

00045

PACE Sample Number:

95 0032798

Date Collected:

05/08/91

Date Received:

05/09/91

ParameterUnitsMDLS6-11 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	us <sup>2 kg</sup> 7/6/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL Method Detection Limit

ND Not detected at or above the MDL.

Unifirst

PACE Project Number: 810509500

PACE Sample Number:

95 0032828

Date Collected:

05/08/91

Date Received:

05/09/91

ParameterUnitsMDLS1-11 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

uJ 243  
7/6/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.





DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
INORGANIC ANALYSES DATA

Samples Collected 5/8/91

Chemical Analyses Performed By  
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Metals analytical data presented for this sample delivery group were good. All unqualified positive sample data may be used without reservation.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).

UJ - The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

Inorganic Data Validation

for

Environmental Project Control, Inc.

Samples Collected 5/8/91

Case Narrative

This group contained three water samples including one field blank to be analyzed for metals.

Samples validated in this report are noted below:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-11	3280	05/08/91
S1-11FB	3282	05/08/91
S6-11	3277	05/08/91

The areas reviewed during validation are listed below.

## CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
- IX. ICP Serial Dilution Analysis
- X. Detection Limits
- XI. Sample Result Verification
- XII. Other QC
- XIII. Overall Assessment

## Data Validation

### I. Holding Times

All metals analyses were conducted within acceptable holding times.

### II. Calibration

Calibrations for metals were satisfactory.

One of the standards analyzed to establish the calibration curve for AA must be at the CRDL. The CRDL for antimony is 60 ppb, and the highest standard analyzed was 45 ppb. Since antimony was not detected in any sample (including the matrix spike), data quality was not affected.

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within  $\pm 20\%$  of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for chromium and silver were estimated.

### III. Blanks

No preparation or calibration blanks were above the CRDLs or less than the negative CRDLs.

Lead was detected in the preparation blank at 1.0 ppb.

Continuing calibration blank for manganese (2.0 ppb) was greater than the IDL. No data were affected.

The field blank contained iron (140 ppb), lead (1.0 ppb), and zinc (19 ppb).

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Lead results were qualified as less than the reported values.

### IV. ICP Interference Check Sample

Interference check sample results were satisfactory.

#### **V. Matrix Spike Sample Analysis**

Matrix spike analyses were satisfactory except for barium (8.5% recovery) and thallium (70.8% recovery). Thallium detection limits were estimated (UJ). Positive barium results were estimated (J). Detection limits were rejected (R).

#### **VI. Duplicate Sample Analysis**

Duplicate analyses were satisfactory.

#### **VII. Laboratory Control Sample Analyses**

Laboratory control sample results were satisfactory.

#### **VIII. Furnace Atomic Absorption Analysis**

Duplicate injections were performed for all samples and agreed within  $\pm 20\%$ .

The method of standard additions was not required.

#### **IX. ICP Serial Dilution Analysis**

Serial dilutions were conducted on S1-11. All results met the validation criteria of 15%.

#### **X. Detection Limits**

Instrument detection limits (IDLs) should be less than the contract required detection limits (CRDLs). The IDL reported for mercury is equal to its CRDL. Mercury was not detected in any of the samples, so no data were qualified.

#### **XI. Sample Result Verification**

Sample results were acceptable as reported.

#### **XII. Other QC**

Samples were not analyzed for total and dissolved metals. Therefore, no additional QC was available.

### **XIII. Overall Assessment**

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. Positive results and detection limits for chromium and silver were estimated.

Lead was detected in the preparation blank at 1.0 ppb.

Continuing calibration blank for manganese (2.0 ppb) was greater than the IDL. No data were affected.

The field blank contained iron, lead, and zinc. Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Lead results were qualified as less than the reported value in Sample S1-11.

Matrix spike analyses were satisfactory except for barium (8.5% recovery) and thallium (70.8% recovery). Thallium detection limits were estimated (UJ). Positive barium results were estimated (J). Detection limits were rejected.



## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

00016

EPA SAMPLE NO.

S1-11

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: S1-11

Matrix (soil/water): WATER

Lab Sample ID: 3280.1

Level (low/med): LOW

Date Received: 05/09/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U	W	F
7440-39-3	Barium	16.0	B	N	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	86200			P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	6.0	B		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	0.70	B	W	F
7439-95-4	Magnesium	10300			P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	2350	B		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	J	P
7440-23-5	Sodium	86700			P
7440-28-0	Thallium	0.70	U	W	F
7440-62-2	Vanadium	5.0	B		P
7440-66-6	Zinc	122			P
	Cyanide				NR

*pm*  
7/18/91

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

1  
INORGANIC ANALYSES DATA SHEET 00017

EPA SAMPLE NO.

S1-11FB

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: S1-11

Matrix (soil/water): WATER

Lab Sample ID: 3282.8

Level (low/med): LOW

Date Received: 05/09/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	12.5	U	R	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	448	U		P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	140			P
7439-92-1	Lead	1.0	B		F
7439-95-4	Magnesium	509	U		P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	760	U		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	J	P
7440-23-5	Sodium	390	U		P
7440-28-0	Thallium	0.70	U	J	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	19.0	B		P
	Cyanide				NR

*7/18/91*

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET 00015 EPA SAMPLE NO.

S6-11

Lab Name: PACE INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: S1-11

Matrix (soil/water): WATER

Lab Sample ID: 3277.1

Level (low/med): LOW

Date Received: 05/09/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U	W	F
7440-39-3	Barium	19.0	B	NJ	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	88900			P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	0.50	U	W	F
7439-95-4	Magnesium	10500			P
7439-96-5	Manganese	5.0	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	2540	B		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	J	P
7440-23-5	Sodium	89700			P
7440-28-0	Thallium	0.70	U	WNJ	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	149			P
	Cyanide				NR

*pen*  
7/18/91

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:



**DATA VALIDATION REPORT**

**FOR**

**ENVIRONMENTAL PROJECT CONTROL, INC.**

**WELLS G&H PROJECT**

**TREATMENT SYSTEM SAMPLING**

**VOLATILES ANALYSES DATA**

**Samples Collected 05/09/91**

**Chemical Analyses Performed By**

**PACE, Incorporated**

**August 16, 1991**

**By:**

**Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233**

## EXECUTIVE SUMMARY

Tetrachloroethene is the only valid target compound detected. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

Data Validation for  
Environmental Project Control, Inc.

Samples Collected May 09, 1991

Volatiles Analyses Data

Case Narrative

Four treatment system samples were collected May 9, 1991 and submitted to Pace, Inc. May 10, 1991. The laboratory was requested to perform purgeable volatile target compound list (TCL) analyses.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  range may adversely affect the more volatile compounds.

Tetrachloroethene is the only valid target compound detected. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3334	S1-12	05/09/91
3335	S1-12DUP	05/09/91
3337	S1-12TB	05/09/91
3341	S4-10	05/09/91

The areas reviewed during validation are listed below.

## ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment of Data for a Case

## DATA VALIDATION

### I. Sample Holding Times

All samples were analyzed within holding time.

### II. Instrument Performance

Inst. J met bromofluorobenzene (BFB) ion abundance criteria on 04/24/91 1158, 05/12/91 2123, 05/14/91 2242, and 05/15/91 1248.

### III. Calibration

The area for some internal standards and target compounds were manually integrated. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. This validation has been completed on the assumption that the manual integrations as done and reported by the laboratory were valid and correct. No internal standard or surrogate peaks were manually integrated; data do not appear to be affected.

#### 1) Initial Calibration 04/24/91 Inst J

The associated samples are S1-12, S1-12DUP, S1-12MS, S1-12MSD, S1-12TB, and S4-10.

Carbon tetrachloride failed to meet the 0.10 response factor criteria established for this project. This compound was not detected but the non-detects in the associated samples have been rejected.

Response factors and percent relative standard deviation (%RSD) for trans-1,3-dichloropropene cannot be calculated from the quantitation reports. This compound was not detected but the non-detects in the associated samples have been qualified as estimates.

#### Continuing Calibration 05/12/91 2323 Inst. J

The associated sample is S1-12.

Carbon tetrachloride failed to meet the 0.10 relative response factor criteria established for the project. This non-detect in the associated sample was previously rejected.

The following compounds failed to meet the 25% difference (D) criteria:



2-butanone (26%)  
trans 1,3-dichloropropene (72%)

These compounds were not detected but the non-detects for trans 1,3-dichloropropene were qualified as estimates. No other data were qualified.

Continuing Calibration 05/15/91 0033 Inst. J

The associated sample is S1-12TB.

2-Butanone and carbon tetrachloride failed to meet the 0.10 minimum RRF criteria. These compounds were not detected but the non-detects have been rejected in the associated sample.

The following compounds failed to meet the 25% difference criteria:

chloromethane (32%)  
2-butanone (39%)  
trans 1,3-dichloropropene (76%)

These compounds were not detected but the non-detect for trans-1,3-dichloropropene in the associated sample has been qualified as an estimate.

Continuing Calibration 05/15/91 1332 Inst. J

The associated samples are S1-12MS, S1-12MSD, S1-12DUP and S4-10.

2-Butanone and carbon tetrachloride failed to meet the 0.10 minimum RRF criteria. These compounds were not detected but the non-detects in the associated samples were rejected.

The following compounds did not meet the 25% difference criteria:

chloromethane (34%)  
2-butanone (35%)  
trans 1,3-dichloropropene (76%)

These compounds were not detected but the non-detects for trans 1,3-dichloropropene were qualified as estimates.

#### IV. Blanks

Chloroform, 1,1,1-trichloroethane, 4-methyl-2-pentanone, 1,1,2,2-tetrachloroethane and toluene were detected in VBLK01. These compounds were not detected in the associated samples and no data have been qualified.

No target compounds were detected in VBLK02, VBLK03 or S1-12TB.

#### **V. Surrogate Recovery**

All surrogate recoveries were within control limits.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

All matrix spike recoveries are within the established limits.

The Relative Percent Difference (RPD) between matrix spike (MS) and matrix spike duplicate (MSD) recoveries are within the established QC limits.

#### **VII. Field Quality Control Samples**

S1-12DUP is a field duplicate of S1-12. Tetrachloroethene was detected at 2200 ppb in the sample and 2700 ppb in the field duplicate. These values met relative percent difference criteria. Acetone was detected in the original sample at 94 ppb but was not detected in the field duplicate. This value was rejected due to failure to confirm. No other valid target compounds were detected in either sample.

#### **VIII. Internal Standards Performance**

All retention times (RT) and internal standard (IS) areas are acceptable.

#### **IX. TCL Compound Identification**

Compound identifications are acceptable.

#### **X. Compound Quantitation and Reported Detection Limits**

Results and detection limit quantitations are acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were detected.

### **XII. System Performance**

System performance is acceptable.

### **XIII. Overall Assessment of Data for a Case**

Tetrachloroethene is the only valid target compound detected. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

S1-12

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3334.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2557

Level: (low/med) LOW

Date Received: 5/10/91

Moisture: not dec.100.

Date Analyzed: 5/13/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	200.	U
74-83-9-----	Bromomethane	200.	U
75-01-4-----	Vinyl Chloride	200.	U
75-00-3-----	Chloroethane	200.	U
75-09-2-----	Methylene Chloride	100.	U
67-64-1-----	Acetone	94.	JK
75-15-0-----	Carbon Disulfide	100.	U
75-35-4-----	1,1-Dichloroethene	100.	U
75-34-3-----	1,1-Dichloroethane	100.	U
540-59-0-----	1,2-Dichloroethene (total)	100.	U
67-66-3-----	Chloroform	100.	U
107-06-2-----	1,2-Dichloroethane	100.	U
78-93-3-----	2-Butanone	200.	U
71-55-6-----	1,1,1-Trichloroethane	100.	U
56-23-5-----	Carbon Tetrachloride	100.	JK
108-05-4-----	Vinyl Acetate	200.	U
75-27-4-----	Bromodichloromethane	100.	U
78-87-5-----	1,2-Dichloropropane	100.	U
10061-01-5-----	cis-1,3-Dichloropropene	100.	U
79-01-6-----	Trichloroethene	100.	U
124-48-1-----	Dibromochloromethane	100.	U
79-00-5-----	1,1,2-Trichloroethane	100.	U
71-43-2-----	Benzene	100.	U
10061-02-6-----	Trans-1,3-Dichloropropene	100.	UJ
75-25-2-----	Bromoform	100.	U
108-10-1-----	4-Methyl-2-Pentanone	200.	U
591-78-6-----	2-Hexanone	200.	U
127-18-4-----	Tetrachloroethene	2200.	
79-34-5-----	1,1,2,2-Tetrachloroethane	100.	U
108-88-3-----	Toluene	100.	U
108-90-7-----	Chlorobenzene	100.	U
100-41-4-----	Ethylbenzene	100.	U
100-42-5-----	Styrene	100.	U
1330-20-7-----	Xylene (total)	100.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-12 00024

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3334.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2557

Level: (low/med) LOW

Date Received: 5/10/91

Moisture: not dec.100.

Date Analyzed: 5/13/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

Lab Name: PACE

Contract:

S1-12FB *dup*

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3335.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2628

Level: (low/med) LOW

Date Received: 5/10/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	200.	U
74-83-9-----	Bromomethane	200.	U
75-01-4-----	Vinyl Chloride	200.	U
75-00-3-----	Chloroethane	200.	U
75-09-2-----	Methylene Chloride	100.	U
67-64-1-----	Acetone	200.	U
75-15-0-----	Carbon Disulfide	100.	U
75-35-4-----	1,1-Dichloroethene	100.	U
75-34-3-----	1,1-Dichloroethane	100.	U
540-59-0-----	1,2-Dichloroethene (total)	100.	U
67-66-3-----	Chloroform	100.	U
107-06-2-----	1,2-Dichloroethane	100.	U
78-93-3-----	2-Butanone	200.	UR
71-55-6-----	1,1,1-Trichloroethane	100.	U
56-23-5-----	Carbon Tetrachloride	100.	UR
108-05-4-----	Vinyl Acetate	200.	U
75-27-4-----	Bromodichloromethane	100.	U
78-87-5-----	1,2-Dichloropropane	100.	U
10061-01-5-----	cis-1,3-Dichloropropene	100.	U
79-01-6-----	Trichloroethene	100.	U
124-48-1-----	Dibromochloromethane	100.	U
79-00-5-----	1,1,2-Trichloroethane	100.	U
71-43-2-----	Benzene	100.	U
10061-02-6-----	Trans-1,3-Dichloropropene	100.	U J
75-25-2-----	Bromoform	100.	U
108-10-1-----	4-Methyl-2-Pentanone	200.	U
591-78-6-----	2-Hexanone	200.	U
127-18-4-----	Tetrachloroethene	2700.	
79-34-5-----	1,1,2,2-Tetrachloroethane	100.	U
108-88-3-----	Toluene	100.	U
108-90-7-----	Chlorobenzene	100.	U
100-41-4-----	Ethylbenzene	100.	U
100-42-5-----	Styrene	100.	U
1330-20-7-----	Xylene (total)	100.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-12FB <sup>DUP</sup>  
00052

Lab Name: PACE Contract:  
Lab Code: PACE Case No.: EPC SAS No.: SDG No.:  
Matrix: (soil/water) WATER Lab Sample ID: 3335.2  
Sample wt/vol: 5. (g/mL) ML Lab File ID: J2628  
Level: (low/med) LOW Date Received: 5/10/91  
Moisture: not dec.100. Date Analyzed: 5/15/91  
Column: (pack/cap) PACK Dilution Factor: 20.00  
Number TICs found: 0 CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

S1-12TH 0008

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3337.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2608

Level: (low/med) LOW

Date Received: 5/10/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	Butanone	10.	UR
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	UR
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	5.	U
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U
10061-02-6-----	Trans-1,3-Dichloropropene	5.	UJ
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	5.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene (total)	5.	U



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-12TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3337.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2608

Level: (low/med) LOW

Date Received: 5/10/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

S4-10 J. 4

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3341.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2629

Level: (low/med) LOW

Date Received: 5/10/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	5.	U
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	130.	
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene (total)	5.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S4-10

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3341.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2629

Level: (low/med) LOW

Date Received: 5/10/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEMS  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/9/91

Chemical Analyses Performed By  
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

All positive results and detection limits were qualified as estimated for this sample delivery group because of integration of manual areas of most of the compounds in the standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

No positive results were reported for any field samples. The laboratory inadvertently neglected to run the field duplicate sample.

Foaming occurred during the analysis of all samples except the field blank and trip blank.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Five samples were collected and submitted to PACE, Inc. on May 9, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-12FB	3336	05/09/91
S5-7	3342	05/09/91
S6-12	3343	05/09/91
S6-12TB	3345	05/09/91

Sample S6-12DUP was also submitted with this sample delivery group. The laboratory inadvertently neglected to run the duplicate.

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

### **A. Initial**

Initial calibration criteria were met on 5/16/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/20/91.

## **IV. Blanks**

The trip blank, field blank, and method blanks were clean.

## **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

## **VI. Matrix Spike/Matrix Spike Duplicate**

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-12. The relative percent difference for benzene was above QC criteria. No positive results for this compound were reported, so data was not qualified.



## VII. Field Duplicates

Due to an oversight by the laboratory, the field duplicate was not run.

## VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

No positive results were reported for this sample delivery group.

## X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45

<u>Compound</u>	<u>MDL (ug/L)</u>
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Results and detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were reported for this sample delivery group.

#### **XII. System Performance**

System performance was acceptable.

#### **XIII. Overall Assessment of Data for a Case**

All positive results and detection limits for this sample delivery group were qualified as estimated because of the integration of manual areas for most of the compounds.

00024

Unifirst

PACE Project Number: 810510501

PACE Sample Number:

95 0033360

Date Collected:

05/09/91

Date Received:

05/10/91

ParameterUnitsMDLSI-12 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	w et 2/1/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	u
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	u
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	-
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst

PACE Project Number: 810510501

00028

PACE Sample Number:

95 0033425

Date Collected:

05/09/91

Date Received:

05/10/91

ParameterUnitsMDLS5-7ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND <i>us 2/9/91</i>
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND <i>us</i>
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND <i>us</i>
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

Unifirst

PACE Project Number: 810510501

00032

PACE Sample Number:

95 0033433

Date Collected:

05/09/91

Date Received:

05/10/91

ParameterUnitsMDLS6-12ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	us
Chloroethane	ug/L	0.5	ND	ex 7/9/91
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	us
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	us
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL Method Detection Limit

ND Not detected at or above the MDL.

Unifirst

PACE Project Number: 810510501

00036

PACE Sample Number:

95 0033450

Date Collected:

05/09/91

Date Received:

05/10/91

ParameterUnitsMDLS6-12 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND <i>ug 223 7/9/91</i>
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND <i>ug</i>
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND <i>ug</i>
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 05/10/91

Chemical Analyses Performed By  
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233



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## EXECUTIVE SUMMARY

Tetrachloroethene was the only valid target compound detected above the detection limit. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

**Data Validation for  
Environmental Project Control, Inc.**

Samples Collected May 10, 1991

**Volatiles Analyses Data**

**Case Narrative**

Four treatment system samples were collected May 10, 1991 and submitted to Pace, Inc. May 11, 1991. The laboratory was requested to perform purgeable volatile target compound list (TCL) analyses.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  range may adversely affect the more volatile compounds.

Tetrachloroethene is the only valid target compound detected. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3359	S1-13	05/10/91
3360	S1-13DUP	05/10/91
3362	S1-13TB	05/10/91
3354	S4-11	05/10/91

The areas reviewed during validation are listed below.

## ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment of Data for a Case

## DATA VALIDATION

### I. Sample Holding Times

All samples were analyzed within holding time.

### II. Instrument Performance

Instrument J met bromofluorobenzene (BFB) ion abundance criteria on 04/24/91 at 11:58 and on 05/11/91 at 17:12.

Instrument G met BFB ion abundance criteria on 05/14/91 at 12:28, on 05/15/91 at 12:47, and on 05/16/91 at 11:32.

### III. Calibration

The areas for some internal standards and target compounds were manually integrated. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. This validation has been completed on the assumption that the manual integrations as done and reported by the laboratory were valid and correct. No internal standard or surrogate peaks were manually integrated; data do not appear to be affected.

Response factors and percent relative standard deviation (%RSD) for trans 1,3-dichloropropene cannot be calculated from the quantitation reports. This compound was not detected but the non-detects in the associated samples have been qualified as estimates.

#### Initial Calibration 04/24/91 Inst J

The associated sample is S1-13.

Carbon tetrachloride failed to meet the 0.10 response factor criteria established for this project. This compound was not detected but the non-detect in the associated sample has been rejected.

All compounds met the 30% relative standard deviation (RSD) criteria.

#### Initial Calibration 05/14/91 Inst G

The associated samples are: S1-13TB, S1-13DUP, S1-13MS, S1-13MSD, and S4-11.

2-Butanone failed to meet the 0.10 average relative response factor criteria established for this project. This compound was not detected but the non-detects in the associated samples have been rejected.

2-Butanone, at 32%, failed to meet the 30% relative standard deviation (RSD) criteria. This compound was not detected and the non-detects were previously rejected in the associated samples.

Continuing Calibration 05/11/91 1815 Inst. J

The associated sample is S1-13.

Carbon tetrachloride failed to meet the 0.10 relative response factor criteria established for the project. The non-detect in the associated sample was previously rejected.

The following compounds failed to meet the 25% difference (D) criteria:

chloromethane (32%)  
trans 1,3-dichloropropene (76%)  
2-hexanone (28%)

These compounds were not detected but the non-detects for trans 1,3-dichloropropene were qualified as estimates. No other data were qualified.

Continuing Calibration 05/15/91 1323 Inst. G

Associated samples are: S1-13-TB, S1-13DUP, S1-13MS, and S1-13MSD.

2-Butanone failed to meet the 0.10 minimum RRF criteria. This compound was not detected and the non-detects were previously rejected in the associated samples.

All compounds met the 25% difference criteria.

Continuing Calibration 05/16/91 1153 Inst. G

The associated sample is S4-11.

2-Butanone failed to meet the 0.10 minimum RRF criteria. This compound was not detected and the non-detect in the associated sample was previously rejected.

The following compounds did not meet the 25% difference criteria:

methylene chloride (37%)  
acetone (44%)

These compounds were not detected and no data were qualified.

#### **IV. Blanks**

Methylene chloride and toluene were detected in VBLK01 at 9 and 4 ppb, respectively. These compounds were not detected in the associated samples and no data have been qualified.

No target compounds were detected in VBLK02, VBLK03, or S1-13TB.

#### **V. Surrogate Recovery**

All surrogate recoveries were within control limits.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

All matrix spike recoveries are within the established QC limits.

The Relative Percent Difference (RPD) between matrix spike (MS) and matrix spike duplicate (MSD) recoveries are within the established QC limits.

#### **VII. Field Quality Control Samples**

S1-13DUP is a field duplicate of S1-13. Tetrachloroethene was detected at 3000 ppb in the sample and 2500 ppb in the field duplicate. These values met relative percent difference criteria. No other target compounds were detected in either sample.

#### **VIII. Internal Standards Performance**

All retention times (RT) and internal standard (IS) areas are acceptable.

#### **IX. TCL Compound Identification**

Compound identifications are acceptable.

**X. Compound Quantitation and Reported Detection Limits**

Results and detection limit quantitations are acceptable with regard to the supporting data.

**XI. Tentatively Identified Compounds**

No TICs were detected.

**XII. System Performance**

System performance is acceptable.

**XI. Overall Assessment of Data for a Case**

Tetrachloroethene was the only valid target compound detected above the detection limit. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

S1-13 00024

Lab Name: PACE Contract:   
 Lab Code: PACE Case No.: EPC SAS No.: SDG No.:   
 Matrix: (soil/water) WATER Lab Sample ID: 3359.0   
 Sample wt/vol: 5. (g/mL) ML Lab File ID: J2549   
 Level: (low/med) LOW Date Received: 5/11/91   
 Moisture: not dec.100. Date Analyzed: 5/12/91   
 Column: (pack/cap) PACK Dilution Factor: 20.00

CAS NO. COMPOUND CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L Q

74-87-3-----	Chloromethane	200.	U
74-83-9-----	Bromomethane	200.	U
75-01-4-----	Vinyl Chloride	200.	U
75-00-3-----	Chloroethane	200.	U
75-09-2-----	Methylene Chloride	100.	U
67-64-1-----	Acetone	200.	U
75-15-0-----	Carbon Disulfide	100.	U
75-35-4-----	1,1-Dichloroethene	100.	U
75-34-3-----	1,1-Dichloroethane	100.	U
540-59-0-----	1,2-Dichloroethene (total)	100.	U
67-66-3-----	Chloroform	100.	U
107-06-2-----	1,2-Dichloroethane	100.	U
78-93-3-----	2-Butanone	200.	U
71-55-6-----	1,1,1-Trichloroethane	100.	U
56-23-5-----	Carbon Tetrachloride	100.	U R
108-05-4-----	Vinyl Acetate	200.	U
75-27-4-----	Bromodichloromethane	100.	U
78-87-5-----	1,2-Dichloropropane	100.	U
10061-01-5-----	cis-1,3-Dichloropropene	100.	U
79-01-6-----	Trichloroethene	100.	U
124-48-1-----	Dibromochloromethane	100.	U
79-00-5-----	1,1,2-Trichloroethane	100.	U
71-43-2-----	Benzene	100.	U
10061-02-6-----	Trans-1,3-Dichloropropene	100.	U J
75-25-2-----	Bromoform	100.	U
108-10-1-----	4-Methyl-2-Pentanone	200.	U
591-78-6-----	2-Hexanone	200.	U
127-18-4-----	Tetrachloroethene	3000.	
79-34-5-----	1,1,2,2-Tetrachloroethane	100.	U
108-88-3-----	Toluene	100.	U
108-90-7-----	Chlorobenzene	100.	U
100-41-4-----	Ethylbenzene	100.	U
100-42-5-----	Styrene	100.	U
1330-20-7-----	Xylene (total)	100.	U



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-13  
00025

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3359.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2549

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/12/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
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9.				
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11.				
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27.				
28.				
29.				
30.				

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

S1-13DUP 00031

Lab Name: PACE	Contract:		
Lab Code: PACE	Case No.: EPC	SAS No.:	SDG No.:
Matrix: (soil/water) WATER		Lab Sample ID: 3360.3	
Sample wt/vol: 5. (g/mL) ML		Lab File ID: G2910	
Level: (low/med) LOW		Date Received: 5/11/91	
Moisture: not dec.100.		Date Analyzed: 5/15/91	
Column: (pack/cap) PACK		Dilution Factor: 20.00	

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3-----	Chloromethane	200.	U
74-83-9-----	Bromomethane	200.	U
75-01-4-----	Vinyl Chloride	200.	U
75-00-3-----	Chloroethane	200.	U
75-09-2-----	Methylene Chloride	100.	U
67-64-1-----	Acetone	200.	U
75-15-0-----	Carbon Disulfide	100.	U
75-35-4-----	1,1-Dichloroethene	100.	U
75-34-3-----	1,1-Dichloroethane	100.	U
540-59-0-----	1,2-Dichloroethene (total)	100.	U
67-66-3-----	Chloroform	100.	U
107-06-2-----	1,2-Dichloroethane	100.	U
78-93-3-----	2-Butanone	200.	U R
71-55-6-----	1,1,1-Trichloroethane	100.	U
56-23-5-----	Carbon Tetrachloride	100.	U
108-05-4-----	Vinyl Acetate	200.	U
75-27-4-----	Bromodichloromethane	100.	U
78-87-5-----	1,2-Dichloropropane	100.	U
10061-01-5-----	cis-1,3-Dichloropropene	100.	U
79-01-6-----	Trichloroethene	100.	U
124-48-1-----	Dibromochloromethane	100.	U
79-00-5-----	1,1,2-Trichloroethane	100.	U
71-43-2-----	Benzene	100.	U
10061-02-6-----	Trans-1,3-Dichloropropene	100.	U 5
75-25-2-----	Bromoform	100.	U
108-10-1-----	4-Methyl-2-Pentanone	200.	U
591-78-6-----	2-Hexanone	200.	U
127-18-4-----	Tetrachloroethene	2500.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	100.	U
108-88-3-----	Toluene	100.	U
108-90-7-----	Chlorobenzene	100.	U
100-41-4-----	Ethylbenzene	100.	U
100-42-5-----	Styrene	100.	U
1330-20-7-----	Xylene(total)	100.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-13DUP

00032

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3360.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2910

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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29.				
30.				

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

10038

S1-10013

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDL No.:

Matrix: (soil/water) WATER

Lab Sample ID: 1002.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2907

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	5.	U
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	5.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene(total)	5.	U

FORM I VOA

1/87 Rev.

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-1304 39

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3362.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2907

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

S4-11 00044

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3354.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2924

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	100.	U
75-00-3	Chloroethane	100.	U
75-09-2	Methylene Chloride	50.	U
67-64-1	Acetone	100.	U
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	50.	U
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethene (total)	50.	U
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	29.	U
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	50.	U
10061-02-6	Trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachloroethene	1400.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	50.	U
108-90-7	Chlorobenzene	50.	U
100-41-4	Ethylbenzene	50.	U
100-42-5	Styrene	50.	U
1330-20-7	Xylene(total)	50.	U

FORM I VOA

1/87 Rev.

Resubmitted Data

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TEMPORARILY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S4-11 00045

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3354.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2924

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/10/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991  
Rev. 9/6/91

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233



## EXECUTIVE SUMMARY

Data quality for this sample delivery group was good. Detection limits for aromatic compounds have been estimated for all samples. Detection limits for 2-butanone were rejected in all samples. These samples were apparently shipped via overnight courier; however, this information was not provided on the chain of custody forms. The chain of custody forms do not show that the samples were relinquished by the sampler.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Five samples were collected and submitted to PACE, Inc. on May 10, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
V131V1FS	3387	05/10/91
V131V1TB	3388	05/10/91
V131V1FD	3389	05/10/91
V197V1FS	3425	05/10/91
V154V1FS	3427	05/10/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimates in all samples in this sample delivery group.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### **A. Initial**

Initial calibration criteria were met on 5/17/91 with the exception of the RRF for 2-butanone (actual 0.030; criteria 0.1) and %RSD for 2-butanone (actual 39.9; criteria 30). Detection limits for 2-butanone were rejected in all samples.

### **B. Continuing**

Continuing calibration criteria were met on 5/19/91 with the exception of the RF for 2-butanone (actual 0.019; criteria 0.1) and the % difference for acetone (actual 53.2; criteria 25) and 2-butanone (actual 36.7; criteria 25). Detection limits for acetone were qualified as estimated in Samples V131V1FS, V131V1TB, and V154V1FS. Other data were not affected.

Continuing calibration criteria were met on 5/20/91 with the exception of the % difference for bromomethane (actual 32.9; criteria 25), chloroethane (actual 25.6; criteria 25), methylene chloride (actual 26.5; criteria 25), and benzene (actual 26.7; criteria 25). Data were not affected.

## **IV. Blanks**

Acetone was reported in Method Blank VBLK01. Methylene chloride was reported in Method Blank VBLK02 and the trip blank. Methylene chloride reported in Sample V197V1FS was qualified as less than the reported value.

## V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

## VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate analyses for this day's samples were conducted on UniFirst treatment system samples. Data were within acceptance criteria.

## VII. Field Duplicates

Compounds and concentrations (in ug/L) reported for Samples V131V1FS and V131V1FD were as follows:

<u>Compound</u>	<u>V131V1FS</u>	<u>V131V1FD</u>
Vinyl Chloride	760	760
1,2-Dichloroethenes	1400	1300
Trichloroethene	280	310

Agreement was excellent and within QC criteria.

## VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

TCL compound identifications were acceptable.

## X. Compound Quantitation and Reported Detection Limits

Trichloroethene was reported in Sample V154V1FS at a concentration of 440 ug/L. The correct concentration was 420 ug/L.

The concentration of 1,2-dichloroethenes reported in Sample V197V1FS (2100 ug/L) was slightly beyond the calibration range of the instrument. However, this concentration did meet accuracy and precision criteria and was accepted unqualified.

All other results and detection limits were acceptable with regard to the supporting data.

**XI. Tentatively Identified Compounds**

No TICs were reported for this SDG.

**XII. System Performance**

System performance requires attention. Manual integration should be addressed.

All samples were analyzed outside the required holding time.

RF criteria needs to be monitored.

**XIII. Overall Assessment of Data for a Case**

Data quality for this sample delivery group was good.

All aromatic compounds were qualified as estimates.

All 2-Butanone detection limits were rejected.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131V1FS

V131FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00028

Matrix: (soil/water) WATER

Lab Sample ID: 3387

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62950

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/19/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	760.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	UJ
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1400.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	UR
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	280.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	UJ
108-90-7	-----Chlorobenzene	50.	UJ
100-41-4	-----Ethylbenzene	50.	UJ
100-42-5	-----Styrene	50.	UJ
1330-20-7	-----Xylene (total)	50.	UJ

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V12JVL2

V131FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00029

Matrix: (soil/water) WATER

Lab Sample ID: 3387

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62950

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/19/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131VITB

Lab Name: PACE

Contract:

V131TB

00036

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3388

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62953

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/19/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	11.	
67-64-1	-----Acetone	10.	UJ
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	UJ
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	UJ
108-90-7	-----Chlorobenzene	5.	UJ
100-41-4	-----Ethylbenzene	5.	UJ
100-42-5	-----Styrene	5.	UJ
1330-20-7	-----Xylene (total)	5.	UJ

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V131TB

V131TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SD000.37

Matrix: (soil/water) WATER

Lab Sample ID: 3388

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62953

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/19/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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00041

SAMPLE DATA

Q5003389.1

V13/V1FB <sup>D</sup>eks 6/28/91

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131VLED

V131FED

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00042

Matrix: (soil/water) WATER

Lab Sample ID: 3389

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62968

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	760.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1300.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U R
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	310.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U J
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U J
108-90-7	-----Chlorobenzene	50.	U J
100-41-4	-----Ethylbenzene	50.	U J
100-42-5	-----Styrene	50.	U J
1330-20-7	-----Xylene (total)	50.	U J

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V131V1FD

V131FED

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No. 00043

CR  
11/11/91

Matrix: (soil/water) WATER

Lab Sample ID: 3389

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62968

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V197VLES

V197FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 34200051

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62969

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	g
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	1900.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	97.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	2100.	U
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	41.	J
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	57.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

VOLEATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V197FS

V197FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3425

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62969

00052

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V154VIF3

V154VIF3

00051

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3427

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2956

Level: (low/med) LOW

Date Received: 5/11/91

\* Moisture: not dec.100.

Date Analyzed: 5/19/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

74-87-3	Chloromethane	50.	U
74-83-9	Bromomethane	50.	U
75-01-4	Vinyl Chloride	50.	U
75-00-3	Chloroethane	50.	U
75-09-2	Methylene Chloride	25.	U
67-64-1	Acetone	50.	U
75-15-0	Carbon Disulfide	25.	U
75-35-4	1,1-Dichloroethane	25.	U
75-34-3	1,1-Dichloroethane	25.	U
540-59-0	1,2-Dichloroethane (total)	480 25.	U
67-66-3	Chloroform	25.	U
107-06-2	1,2-Dichloroethane	25.	U
78-93-3	2-Butanone	50.	U
71-55-6	1,1,1-Trichloroethane	25.	U
56-23-5	Carbon Tetrachloride	25.	U
108-05-4	Vinyl Acetate	50.	U
75-27-4	Bromodichloromethane	25.	U
78-87-5	1,2-Dichloropropane	25.	U
10061-01-5	cis-1,3-Dichloropropane	25.	U
79-01-6	Trichloroethene	420 440 25.	U
124-48-1	Dibromochloromethane	25.	U
79-00-5	1,1,2-Trichloroethane	25.	U
71-43-2	Benzene	25.	U
10061-02-6	Trans-1,3-Dichloropropane	25.	U
75-25-2	Bromoform	25.	U
108-10-1	4-Methyl-2-Pentanone	50.	U
591-78-6	2-Hexanone	50.	U
127-18-4	Tetrachloroethene	25.	U
79-34-8	1,1,2,2-Tetrachloroethane	25.	U
108-88-3	Toluene	25.	U
108-90-7	Chlorobenzene	25.	U
100-41-4	Ethylbenzene	25.	U
100-42-5	Styrene	25.	U
1330-20-7	Xylene (total)	25.	U

9/4/91

L. Schultz 9/6/91



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
RELATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V154VIFS

V154FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3427

00062

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2956

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Analyzed: 5/19/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
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19.				
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22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEMS  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/10/91

Chemical Analyses Performed By  
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

All positive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds in the standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

Foaming occurred during the analysis of all samples except the field blank and trip blank.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Seven samples were collected and submitted to PACE, Inc. on May 10, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S5-8	3355	05/10/91
S6-13	3356	05/10/91
S6-13DUP	3357	05/10/91
S6-13TB	3361	05/10/91
S1-13FB	3361	05/10/91
V140V1FD	3440	05/10/91
V140V1FB	3441	05/10/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Peaks were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

### **A. Initial**

Initial calibration criteria were met on 5/16/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/20/91. Continuing calibration criteria were met on 5/21/91 with the exception of the RF for 1,1-dichloroethane (actual 0.01137; criteria 0.1) and the % difference for 1,1-dichloroethane (actual 99.6; criteria 25). Positive sample data were not affected; detection limits for 1,1-dichloroethane were rejected in Samples S6-13TB, S1-13FB, S6-13MS, S6-13MSD, V140V1FD, and V140V1FB.

## **IV. Blanks**

The trip blank, field blank, and method blanks were clean.

## **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-13. Results were within QC criteria.

#### VII. Field Duplicates

Samples S6-13 and S6-13DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58

<u>Compound</u>	<u>MDL (ug/L)</u>
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Although not reported on the Form I for Sample S5-8, 1,1-dichloroethene was reported on the quant report at 0.93 ug/L. Since this concentration is above the MDL for this project, it should have been reported on the Form I. The Form I was corrected by the validator.

Methylene chloride reported in Sample S5-8 was below the MDL determined by the PQL study for this project. This result was corrected to "ND" by the data validator.

All other results and detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were reported for this sample delivery group.

#### **XII. System Performance**

System performance was acceptable.

#### **XIII. Overall Assessment of Data for a Case**

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

Detection limits for 1,1-dichloroethane were rejected in the samples listed in Section III.



00028

UNIFIRST/ENSR

PACE Project Number: 810511500

PACE Sample Number:

95 0033557

Date Collected:

05/10/91

Date Received:

05/11/91

ParameterUnitsMDLS5-8ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	u)	2KJ 7/9/91
Chloroethane	ug/L	0.5	ND		
Methylene chloride	ug/L	0.5	1.2 ND		
1,1-Dichloroethene	ug/L	0.5	ND 0.93		
1,1-Dichloroethane	ug/L	0.5	1.2		
trans-1,2-Dichloroethene	ug/L	0.5	ND	u)	
cis-1,2-Dichloroethene	ug/L	0.5	ND		
Chloroform	ug/L	0.5	ND		
1,2-Dichloroethane	ug/L	0.5	ND		
1,1,1-Trichloroethane	ug/L	0.5	13.60		
Carbon tetrachloride	ug/L	0.5	ND	u)	
Bromodichloromethane	ug/L	0.5	ND		
1,2-Dichloropropane	ug/L	0.5	ND		
cis-1,3-Dichloropropene	ug/L	0.5	ND		
Trichloroethene	ug/L	0.5	ND		
Dibromochloromethane	ug/L	0.5	ND		
1,1,2-Trichloroethane	ug/L	0.5	ND		
Benzene	ug/L	0.5	ND		
trans-1,3-Dichloropropene	ug/L	0.5	ND		
Bromoform	ug/L	0.5	ND		
Tetrachloroethene	ug/L	0.5	ND		
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND		
Toluene	ug/L	0.5	ND		
Chlorobenzene	ug/L	0.5	ND		
Ethyl benzene	ug/L	0.5	ND		
Xylene, total	ug/L	0.5	ND		

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00036

UNIFIRST/ENSR

PACE Project Number: 810511500

PACE Sample Number:

95 0033565

Date Collected:

05/10/91

Date Received:

05/11/91

ParameterUnitsMDLS6-13ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	<i>WJ EKS</i> <i>7/9/91</i>
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL Method Detection Limit

ND Not detected at or above the MDL.

00040

UNIFIRST/ENSR

PACE Project Number: 810511500

PACE Sample Number:

95 0033573

Date Collected:

05/10/91

Date Received:

05/11/91

ParameterUnitsMDLS6-13 DupORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	u) 8/9/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00044

UNIFIRST/ENSR

PACE Project Number: 810511500

PACE Sample Number:

95 0033581

Date Collected:

05/10/91

Date Received:

05/11/91

ParameterUnitsMDLS6-13 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	u <sup>1</sup> 8/19/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	<del>0.5</del>	<del>ND</del>	R
trans-1,2-Dichloroethene	ug/L	0.5	ND	u <sup>1</sup>
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00048

UNIFIRST/ENSR

PACE Project Number: 810511500

PACE Sample Number:

95 0033611

Date Collected:

05/10/91

Date Received:

05/11/91

ParameterUnitsMDLS1-13 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	WJ	2/23/91
Chloroethane	ug/L	0.5	ND		
Methylene chloride	ug/L	0.5	ND		
1,1-Dichloroethene	ug/L	0.5	ND		
1,1-Dichloroethane	ug/L	<del>0.5</del>	ND	R	
trans-1,2-Dichloroethene	ug/L	0.5	ND	WJ	
cis-1,2-Dichloroethene	ug/L	0.5	ND		
Chloroform	ug/L	0.5	ND		
1,2-Dichloroethane	ug/L	0.5	ND		
1,1,1-Trichloroethane	ug/L	0.5	ND		
Carbon tetrachloride	ug/L	0.5	ND		
Bromodichloromethane	ug/L	0.5	ND		
1,2-Dichloropropane	ug/L	0.5	ND		
cis-1,3-Dichloropropene	ug/L	0.5	ND		
Trichloroethene	ug/L	0.5	ND		
Dibromochloromethane	ug/L	0.5	ND		
1,1,2-Trichloroethane	ug/L	0.5	ND		
Benzene	ug/L	0.5	ND		
trans-1,3-Dichloropropene	ug/L	0.5	ND		
Bromoform	ug/L	0.5	ND		
Tetrachloroethene	ug/L	0.5	ND		
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND		
Toluene	ug/L	0.5	ND		
Chlorobenzene	ug/L	0.5	ND		
Ethyl benzene	ug/L	0.5	ND		
Xylene, total	ug/L	0.5	ND		

MDL Method Detection Limit

ND Not detected at or above the MDL.

00052

W.R.GRACE

PACE Project Number: 810511504

PACE Sample Number:

95 0034405

Date Collected:

05/10/91

Date Received:

05/11/91

ParameterUnitsMDLV140 V1 FDORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	us 2/2/91
Chloroethane	ug/L	0.5	ND	7/4/91
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	<del>0.5</del>	ND	R
trans-1,2-Dichloroethene	ug/L	0.5	ND	us
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL Method Detection Limit

ND Not detected at or above the MDL.

00056

W.R.GRACE

PACE Project Number: 810511504

PACE Sample Number:

95 0034413

Date Collected:

05/10/91

Date Received:

05/11/91

ParameterUnitsMDLV140 V1 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	u) chd 1/9/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	<del>0.5</del>	ND	R
trans-1,2-Dichloroethene	ug/L	0.5	ND	uJ
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
INORGANIC ANALYSES DATA

Samples Collected 5/10/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233



## EXECUTIVE SUMMARY

Arsenic results in V131-M1 and V140-M1 were qualified as estimated. Barium, silver, and thallium results were qualified as estimated. Lead, cadmium, and zinc data were qualified as less than their reported values. The cadmium result for V131-M1 was qualified as less than 0.1 ug/L and rounded to 0.2 ug/L for V140-M1.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

Inorganic Data Validation  
for  
Environmental Project Control, Inc.  
Samples Collected 5/10/91

Case Narrative

This group contained six water samples including one field blank. Three of the samples were analyzed for only total metals while the other three samples were analyzed for only cyanide.

Samples validated in this report are noted below:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
V131-M1	3396	5/10/91
V131M1FB	3397	5/10/91
V131-C1	3999	5/10/91
V131C1FB	3400	5/10/91
V140-M1	3415	5/10/91
V140-C1	3417	5/10/91

The areas reviewed during validation are listed below.

**CLP Inorganics Data Validation**

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
- IX. ICP Serial Dilution Analysis
- X. Detection Limits
- XI. Sample Result Verification
- XII. Overall Assessment

## **Data Validation**

### **I. Holding Times**

Samples were analyzed within acceptable holding times.

### **II. Calibration**

CRDL recoveries were out of acceptable limits for chromium (140%) and silver (75%). No qualifications were made on the chromium data. Silver data were qualified as estimated.

### **III. Blanks**

The preparation blank contained lead (0.6 ug/L) and cadmium (0.1 ug/L). Lead and cadmium data were qualified as less than their reported values.

The field blank, V131M1FB, contained lead (0.6 ug/L) and zinc (16 ug/L). Zinc results were qualified as less than their reported values.

### **IV. ICP Interference Check Sample**

ICS results were satisfactory.

### **V. Matrix Spike Sample Analysis**

Matrix spikes were conducted on V131-M1 and V140-M1 for metals and V131-C1 and V140-C1 for cyanide. Cyanide recoveries were satisfactory. Recoveries were out of acceptable limits for V131-M1 for arsenic (74%), barium (9%), silver (60%), and thallium (71%) and for V140-M1 for barium (9%) and silver (74%). Barium, silver, and thallium results were qualified as estimated.

### **VI. Duplicate Sample Analysis**

Duplicate sample analyses were conducted on V131-M1 and V140-M1 for metals and V131-C1 and V140-M1 for cyanide. Results were satisfactory.

### **VII. Laboratory Control Sample Analysis**

LCS results were satisfactory.

#### **VIII. Furnace Atomic Absorption Analysis**

Analytical spikes were out of acceptance limits for arsenic in V131-M1 (80%), the duplicate of V131-M1 (82%), and V140-M1 (78%) and for thallium in V131-M1 (78%). These results were qualified as estimated.

#### **IX. ICP Serial Dilution Analysis**

Serial dilution results were satisfactory.

#### **X. Detection Limits**

IDL's were less than the CRDL's.

#### **XI. Sample Result Verification**

Calculations were performed correctly.

The IDL for cadmium was listed as 0.1 ug/L on Form XI; the cadmium result for V131-M1 was reported as 0.09 ug/L which was below the IDL. The cadmium result for V131-M1 was qualified as less than 0.1 ug/L. Additionally, the cadmium result for V140-M1 was reported as 0.18 ug/L which suggested a precision that probably did not exist. The result was rounded to 0.2 ug/L.

#### **XII. Overall Assessment**

Data were considered valid with the following exceptions:

Arsenic in V131-M1 and V140-M1 were qualified as estimated due to poor analytical spike recoveries.

Barium and thallium results were qualified as estimated based on matrix spike recoveries.

Silver data were qualified as estimated based on poor CRDL and matrix spike recoveries.

Lead and cadmium data were qualified as less than their reported values based on preparation blank results. The cadmium result for V131-M1 was qualified as less than 0.1 ug/L since the IDL was 0.1 ug/L. Cadmium in V140-M1 was rounded to 0.2 ug/L.

Zinc results were qualified as less than their reported values based on field blank results.

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET  
00025

EPA SAMPLE NO.

V131-M1

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: V131M1

matrix (soil/water): WATER

Lab Sample ID: 3396.4

level (low/med): LOW

Date Received: 05/11/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.9	B	WJ	F
7440-39-3	Barium	26.0	B	WJ	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	0.1 0.090	B	U	F
7440-70-2	Calcium	46900			P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	6.0	B		P
7439-89-6	Iron	1420			P
7439-92-1	Lead	0.80	B	U	F
7439-95-4	Magnesium	9930			P
7439-96-5	Manganese	1160			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	7200			P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	WJ	P
7440-23-5	Sodium	30900			P
7440-28-0	Thallium	0.70	U	WJ	F
7440-62-2	Vanadium	5.0	B		P
7440-66-6	Zinc	26.0		U	P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00026

V131M1FB

Lab Name: PACE\_INCORPORATED\_\_\_\_\_ Contract: EPC\_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: V131M1

Matrix (soil/water): WATER

Lab Sample ID: 3397.2\_\_\_\_\_

Level (low/med): LOW\_\_\_\_\_

Date Received: 05/11/91

% Solids: \_\_\_\_\_ 0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	12.5	U		P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	0.080	U		F
7440-70-2	Calcium	448	U		P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	0.60	<del>U</del>		F
7439-95-4	Magnesium	509	U		P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	760	U		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	390	U		P
7440-28-0	Thallium	0.70	U		F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	16.0	<del>U</del>		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR\_\_\_\_\_ Texture: \_\_\_\_\_

Color After: COLORLESS Clarity After: CLEAR\_\_\_\_\_ Artifacts: \_\_\_\_\_

Comments:

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## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET  
00027

EPA SAMPLE NO.

V131-C1

Lab Name: PACE\_INCORPORATED\_\_\_\_\_ Contract: EPC\_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: V131M1

Matrix (soil/water): WATER Lab Sample ID: 3999.9\_\_\_\_\_

Level (low/med): LOW\_\_\_\_\_ Date Received: 05/11/91

% Solids: \_\_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide	10	U		AS

Color Before: \_\_\_\_\_ Clarity Before: \_\_\_\_\_ Texture: \_\_\_\_\_

Color After: \_\_\_\_\_ Clarity After: \_\_\_\_\_ Artifacts: \_\_\_\_\_

Comments:

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## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET  
00028

EPA SAMPLE NO.

V131C1FB

Lab Name: PACE INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: V131M1

matrix (soil/water): WATER

Lab Sample ID: 3400.6

Level (low/med): LOW

Date Received: 05/11/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide	10	U		AS

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00029

V140-M1

Lab Name: PACE\_INCORPORATED\_\_\_\_\_ Contract: EPC\_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: V131M1

matrix (soil/water): WATER

Lab Sample ID: 3415.4\_\_\_\_\_

level (low/med): LOW\_\_\_\_\_

Date Received: 05/11/91

% Solids: \_\_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	210	-		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	3.6	B	NJ	F
7440-39-3	Barium	28.0	B	NJ	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	0.2 0.18	B	U	F
7440-70-2	Calcium	43800	-		P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	9.0	B		P
7439-89-6	Iron	1750	-		P
7439-92-1	Lead	0.70	B	U	F
7439-95-4	Magnesium	9970	-		P
7439-96-5	Manganese	1060	-		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	7230	-		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	NJ	P
7440-23-5	Sodium	30100	-		P
7440-28-0	Thallium	0.70	U	J	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	30.0	-	U	P
	Cyanide		-		NR

Color Before: COLORLESS

Clarity Before: CLEAR\_

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR\_

Artifacts: \_\_\_\_\_

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00030

V140-C1

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.: V131M1

Matrix (soil/water): WATER

Lab Sample ID: 3417.0

Level (low/med): LOW

Date Received: 05/11/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum		-		NR
7440-36-0	Antimony		-		NR
7440-38-2	Arsenic		-		NR
7440-39-3	Barium		-		NR
7440-41-7	Beryllium		-		NR
7440-43-9	Cadmium		-		NR
7440-70-2	Calcium		-		NR
7440-47-3	Chromium		-		NR
7440-48-4	Cobalt		-		NR
7440-50-8	Copper		-		NR
7439-89-6	Iron		-		NR
7439-92-1	Lead		-		NR
7439-95-4	Magnesium		-		NR
7439-96-5	Manganese		-		NR
7439-97-6	Mercury		-		NR
7440-02-0	Nickel		-		NR
7440-09-7	Potassium		-		NR
7782-49-2	Selenium		-		NR
7440-22-4	Silver		-		NR
7440-23-5	Sodium		-		NR
7440-28-0	Thallium		-		NR
7440-62-2	Vanadium		-		NR
7440-66-6	Zinc		-		NR
	Cyanide	10	U		AS

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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DATA VALIDATION REPORT

FOR

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

SEMIVOLATILES ANALYSIS DATA  
Samples Collected May 10, 1991

Chemical Analyses Performed by:

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

No target compound list (TCL) compounds were detected in Samples V131S1FS, V140S1FS, V131S1FD, or V140S1FD; bis(2-ethylhexyl)phthalate was detected in V131S1FB at 61 ppb. One unknown compound was found in V131S1FS and V131S1FD. No qualifiers have been applied to these reported results. One early-eluting unknown peak observed in V131S1FB-RE and V131S1FD has been rejected as a blank contaminant.

Problems identified on the Chain of Custody (COC) records include: (1) 9 COC's are included although only 2 are pertinent to this data package; (2) there is no "Relinquished by" signature; (3) the only transfer signature found does not include the affiliation of the person involved; (4) analysis parameters are listed in the "Matrix" column of the form, while "EPA 2/88" is recorded in the analysis request section; (5) the sampler name recorded at the top of the form includes only a first initial. The full name should be documented here; and (6) separate entries should not be made for MS/MSD samples.

Validation of the data package is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation or the sample detection, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying Form I's copied from the data package to qualify some of the results as appropriate based on the findings of the data review.

### Case Narrative

Nine water samples (including separate samples for 2 matrix spike/matrix spike duplicate pairs) were collected on May 10, 1991 and received by Pace, Inc. on May 11, 1991. Analysis of semivolatile organic compounds according to EPA Contract Laboratory Program (CLP) Statement of Work 2/88 was performed.

The following samples are included in this Sample Delivery Group (SDG):

<u>Client ID</u>	<u>Lab ID</u>	<u>Collection Date</u>
V131S1FS	3390	5/10/91
V131S1FB	3391	5/10/91
V131S1FD	3392	5/10/91
V140S1FS	3411	5/10/91
V140S1FD	3412	5/10/91

Semivolatiles analysis results for these samples were reported by the laboratory under Project Number 810511.503.

## Semivolatiles

The areas reviewed during the semivolatiles validation procedure are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



## I. Holding Times

All samples were extracted and analyzed within the established holding times.

The COC records do not indicate that the samples were in any way held in cold storage in the field, from the time of collection through shipment to and arrival at the laboratory. Cold storage is a form of preservation and must be documented, or the validator must assume it was not performed. No qualifiers are applied to the results in this case, since no positive results are reported for the samples.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria. The documentation of decafluorotriphenylphosphine (DFTPP) file D2631, run on 6/11/91, includes a total ion chromatogram for a different file (D2606). The retention times of the DFTPP are off slightly, and this caused some concern to the validator until the fact that they were from different runs became apparent. Care should be taken to include only relevant documentation in the data package to avoid similar confusion in the future.

## III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be done as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. In several cases, areas for internal standard (IS) and/or surrogate peaks have also been manually integrated; these must be documented in the data package due to the potential effect on the reported results. The data in this SDG are not affected as no positive results are reported.

### A. Initial

Samples V131S1FS, V131S1FB, V131S1FD, and V140S1FS were analyzed under an initial calibration (IC) performed on 6/11/91, on instrument 7001D. All criteria were met in this calibration with the exception of the Percent Relative Standard Deviation (%RSD) for 4-chloroaniline (36.2), hexachlorocyclopentadiene (34.3), 2,4,5-trichlorophenol (34.3), 2,6-dinitrotoluene (34.3), 4-nitroaniline (30.5), and 3,3'-dichlorobenzidine (45.0). No data are affected.

Samples V131S1FB-RE, V140S1FS-RE, and V140S1FD were analyzed under an IC performed on 6/17/91. All criteria were met in this calibration except the %RSD for 3-nitroaniline (37.8) and diethylphthalate (36.3). No data are affected.

#### B. Continuing

All samples run under the 6/11/91 IC were also run under a continuing calibration (CC) standard on 6/12/91. Criteria were met for this calibration with the exception of the Response Factor (RF) for 3,3'-dichlorobenzidine (0.048, criterion 0.050), and %D for benzoic acid (31.8), 2,4,5-trichlorophenol (28.5), and 3,3'-dichlorobenzidine (26.0). Detection limits for 3,3'-dichlorobenzidine are rejected in V131S1FS, V131S1FD, V131S1FB, and V140S1FS due to the low RF, indicating poor sensitivity to this compound. No other data are affected.

Samples V131S1FB-RE, V140S1FS-RE, and V140S1FD were run immediately following the IC on 6/17/91, without an additional CC standard. This is a valid procedure; no data are affected.

Both MS/MSD pairs were analyzed on 6/18/91 under a separate CC standard. All criteria were met in this calibration with the exception of the Percent Difference (%D) for bis(2-chloroisopropyl)ether (41.2), fluorene (28.9), 4-nitroaniline (29.9), 3,3'-dichlorobenzidine (37.8), and 2,4,6-tribromophenol (31.6). No data are affected. It is noted that the RRF recorded for bis(2-chloroisopropyl)ether on Form VII was incorrect, as was the %D; the value reported here is correct; the error has no additional effect on the data.

#### IV. Blanks

No target compounds were detected in SBLK1, extracted 5/15 and analyzed 6/17. No tentatively identified compounds were reported, however small peaks (below the reportable level) are observed early in the chromatogram, prior the first internal standard. Small peaks at the same relative retention time were reported in Samples V131S1FD (analyzed 6/12) and V131S1FB-RE (analyzed 6/17); these sample results have been rejected as blank contaminants.

Bis(2-ethylhexyl)phthalate was detected in the field blank, V131S1FB, at 61 ug/L. This compound was not detected in any other samples; no data are affected.

#### V. Surrogate Recovery

Recovery of nitrobenzene-d5 was low (23%) in V131S1FB (QC limits 35-114%). The remaining 5 surrogates were also relatively low, but were still within the QC limits. A re-analysis of the

same extract of this sample gave a 35% recovery for nitrobenzene-d5, but 2-fluorobiphenyl fell to 38% (QC limits 43-116%). Again, all 6 surrogate recoveries are on the low side of the acceptable ranges. Re-extraction should have been performed but would have been well outside the 7-day holding time, minimizing its usefulness. It is possible that this sample was improperly spiked with the surrogate solution at the time of extraction, since it is a field blank and should not exhibit matrix problems. No data are affected; surrogate recoveries in all other samples were within the established criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample V131S1FS and Sample V140S1FS. Percent Recovery (%R) was slightly high for 2,4-dinitrotoluene in the MSD for each pair, at 108% and 103% (QC limits 24-96%). No data are affected.

Relative Percent Difference (RPD) values were high for phenol (actual 58, criterion 42), 2-chlorophenol (actual 48, criterion 40), 1,4-dichlorobenzene (actual 52, criterion 28), and 1,2,4-trichlorobenzene (actual 48, criterion 28) in V131S1FS MS/MSD and for pyrene (actual 35, criterion 31) in V140S1FS MS/MSD. No data are qualified.

#### **VII. Field Duplicates**

Two field duplicate pairs were analyzed in this SDG. In V131S1FS and V131S1FD, no target analytes were detected; an unknown peak at 19.5 minutes was detected in both samples at the same estimated concentration. No target or unknown compounds were detected in V140S1FS and V140S1FD.

#### **VIII. Internal Standards Performance**

Areas for 4 of the 6 internal standards were below the minimum acceptable area for V131S1FB and V140S1FS; both these samples were analyzed on 6/12/91. Reruns of original extracts of these samples were performed on 6/17/91; in both cases, the area for d10-phenanthrene was slightly above the acceptable limit. No data are qualified.

#### **IX. TCL Compound Identification**

Compound identifications are properly reported and documented in all cases.

#### **X. Compound Quantitation and Reported Detection Limits**

Results and quantitation limits are correctly reported; no dilutions were performed in this SDG.

#### **XI. Tentatively Identified Compounds**

One early-eluting TIC was rejected in Sample V131S1FB-RE and in Sample V131S1FD due to observation of a similar peak at the same retention time in both the field blank and SBLK1. One reportable TIC is appropriately listed as "Unknown" in Samples V131S1FS and V131S1FD.

#### **XII. System Performance**

System performance was marginal in the analyses performed on 6/11-12, as evidenced by the numerous manually integrated areas in the standards, the low RF observed in the CC standard, and by the relatively low internal standard areas observed in all the samples run on these dates (even those that remained within the limits were on the low side of the ranges). It is apparent that the column was changed prior to the IC on 6/17/91, as the retention times are considerably later in these runs and resolution is improved. Where re-analysis data are available, it is recommended that it be used in favor of original data from 6/12, based on the improved system performance on the later analysis date.

#### **XIII. Overall Assessment**

Sample results are usable as reported with the exception of the following qualifications:

1. The TIC peak reported in V131S1FD and V131S1FB-RE has been rejected as a blank contaminant.

2. Results for 3,3'-dichlorobenzidine have been rejected in V131S1FS, V131S1FD, V131S1FB, and V140S1FS.

Incomplete, unclear, or inaccurate Chain of Custody (COC) records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the COC records included in this data package:

1. More custody records are included than are pertinent to this package; this could cause confusion as to the disposition of the rest of the data requested on the COC's.

2. Transfer signatures are incomplete: no "Relinquished by" signature is present, and the single "Accepted by" signature does not include the affiliation of the person involved.

3. Analysis parameters (e.g., VOC, SVOC) are recorded in the column labelled "Matrix"; entries here should be water, soil, etc.

4. Signature and written name of the sampler at the top of the form should be a full name, not first initial only.

5. Cold storage is not documented.

6. MS/MSD analyses are a laboratory-initiated quality control activity; there should not be separate samples on the COC identified as "MS" and "MSD".

Manually integrated areas should be documented in the data package to allow review of the integration method used and to confirm that the integration was consistent in both standards and samples, where applicable. This is especially important when areas for internal standards and/or surrogates are affected.

Received 7/5/91  
CAE

7B  
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: PACE Contract: ~~00086~~

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Instrument ID: 7001D Calibration Date: 6/12/91 Time: 9:03

Lab File ID: D2647 Init. Calib. Date(s): 6/11/91 6/11/91

In RRF50 for BPCC(%) = .050 Max %D for CCC(\*) is 25.0%

COMPOUND	RRF	RRF50	%D
Phenol	1.899	1.945	2.4 *
bis(2-Chloroethyl)ether	1.649	1.718	4.2
2-Chlorophenol	1.563	1.579	1.0
1,3-Dichlorobenzene	1.451	1.443	.6
1,4-Dichlorobenzene	1.505	1.539	2.3 *
Benzyl alcohol	1.196	1.149	4.0
1,2-Dichlorobenzene	1.517	1.476	2.7
2-Methylphenol	1.644	1.639	.3
bis(2-Chloroisopropyl)ether	3.464	3.033	12.4
4-Methylphenol	1.922	1.861	3.2
N-Nitroso-di-n-propylamine	2.180	1.930	11.5 *
Hexachloroethane	.853	.890	4.3
Nitrobenzene	.636	.583	8.3
Isophorone	1.369	1.320	3.5
2-Nitrophenol	.356	.315	11.7 *
2,4-Dimethylphenol	.491	.556	13.2
Benzoic acid	.579	.395	31.8
bis(2-Chloroethoxy)methane	.567	.552	2.6
2,4-Dichlorophenol	.285	.290	1.9 *
1,2,4-Trichlorobenzene	.396	.317	19.9
Naphthalene	1.207	1.252	3.7
4-Chloroaniline	.265	.241	9.0
Hexachlorobutadiene	.301	.263	12.9 *
4-Chloro-3-methylphenol	.629	.562	10.6 *
2-Methylnaphthalene	.959	.916	4.5
Hexachlorocyclopentadiene	.273	.338	23.7 *
2,4,6-Trichlorophenol	.370	.414	12.2 *
2,4,5-Trichlorophenol	.307	.394	28.5
2-Chloronaphthalene	.825	1.030	24.9
2-Nitroaniline	.476	.520	9.3
Dimethylphthalate	1.363	1.532	12.4
Acenaphthylene	1.545	1.766	14.3
2,6-Dinitrotoluene	.299	.367	23.0
3-Nitroaniline	.222	.214	3.3
Acenaphthene	.939	1.162	23.7 *
2,4-Dinitrophenol	.137	.123	10.0 *
4-Nitrophenol	.127	.120	4.9 *

7C  
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Received 7/5/91  
CAE

Lab Name: PACE

Contract:

~~00067~~

Lab Code: PACE

Case No.: EPC

SAS No.:

BDG No.:

Instrument ID: 7001D

Calibration Date: 6/12/91

Time: 9:03

Lab File ID: D2647

Init. Calib. Date(s): 6/11/91 6/11/91

Min RRF50 for BPCC(%) = .050

Max %D for CCC(%) is 25.0%

COMPOUND	RRF	RRF50	%D
Dibenzofuran	1.372	1.584	15.5
2,4-Dinitrotoluene	.403	.449	11.2
Diethylphthalate	1.427	1.646	15.4
4-Chlorophenyl-phenylether	.496	.557	12.4
Fluorene	1.027	1.183	15.2
4-Nitroaniline	.158	.137	13.0
4,6-Dinitro-2-methylphenol	.159	.158	.6
N-Nitrosodiphenylamine	.390	.451	15.7
4-Bromophenyl-phenylether	.271	.282	4.3
Hexachlorobenzene	.350	.342	2.4
Pentachlorophenol	.179	.140	21.9
Phenanthrene	1.116	1.172	4.9
Anthracene	1.001	1.106	10.4
Di-n-butylphthalate	1.351	1.502	11.2
Fluoranthene	.783	.744	5.0
Pyrene	2.492	2.671	7.2
Butylbenzylphthalate	1.076	1.226	13.9
3,3'-Dichlorobenzidine	.064	.048	26.0
Benzo(a)anthracene	1.202	1.228	2.2
Chrysene	1.137	1.200	5.5
bis(2-Ethylhexyl)phthalate	1.374	1.551	12.9
Di-n-octylphthalate	2.943	3.208	9.0
Benzo(b)fluoranthene	1.418	1.346	5.1
Benzo(k)fluoranthene	1.133	1.171	3.3
Benzo(a)pyrene	1.103	1.080	2.1
Indeno(1,2,3-cd)pyrene	.746	.791	6.1
Dibenzo(a,h)anthracene	.715	.773	8.1
Benzo(g,h,i)perylene	.788	.839	6.4
Nitrobenzene-d5	.644	.600	6.8
2-Fluorobiphenyl	.770	.884	14.9
Terphenyl-d14	2.327	2.395	5.2
Phenol-d6	1.988	2.078	4.6
2-Fluorophenol	1.463	1.430	2.2
2,4,6-Tribromophenol	.177	.098	44.7

(1) Cannot be separated from Diphenylamine

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

V131S1FB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3391.3 0000 30

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2656

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

PC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

108-95-2-----Phenol	10.	U
111-44-4-----bis(2-Chloroethyl) ether	10.	U
95-57-8-----2-Chlorophenol	10.	U
541-73-1-----1,3-Dichlorobenzene	10.	U
106-46-7-----1,4-Dichlorobenzene	10.	U
100-51-6-----Benzyl alcohol	10.	U
95-50-1-----1,2-Dichlorobenzene	10.	U
95-48-7-----2-Methylphenol	10.	U
108-60-1-----bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----4-Methylphenol	10.	U
621-64-7-----N-Nitroso-di-n-propylamine	10.	U
67-72-1-----Hexachloroethane	10.	U
98-95-3-----Nitrobenzene	10.	U
78-59-1-----Isophorone	10.	U
88-75-5-----2-Nitrophenol	10.	U
105-67-9-----2,4-Dimethylphenol	10.	U
65-85-0-----Benzoic acid	50.	U
111-91-1-----bis(2-Chloroethoxy) methane	10.	U
120-83-2-----2,4-Dichlorophenol	10.	U
120-82-1-----1,2,4-Trichlorobenzene	10.	U
91-20-3-----Naphthalene	10.	U
106-47-8-----4-Chloroaniline	10.	U
87-68-3-----Hexachlorobutadiene	10.	U
59-50-7-----4-Chloro-3-methylphenol	10.	U
91-57-6-----2-Methylnaphthalene	10.	U
77-47-4-----Hexachlorocyclopentadiene	10.	U
88-06-2-----2,4,6-Trichlorophenol	10.	U
95-95-4-----2,4,5-Trichlorophenol	50.	U
91-58-7-----2-Chloronaphthalene	10.	U
88-74-4-----2-Nitroaniline	50.	U
131-11-3-----Dimethylphthalate	10.	U
208-96-8-----Acenaphthylene	10.	U
606-20-2-----2,6-Dinitrotoluene	10.	U



1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131S1FB

Lab Name: PACE Contract:   
 Lab Code: PACE Case No.: EPC SAS No.: SDG No.:   
 Matrix: (soil/water) WATER Lab Sample ID: 3391.3   
 Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2656 0000 31   
 Level: (low/med) LOW Date Received: 5/11/91   
 % Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91   
 Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91   
 EPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:  
 CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

99-09-2-----	3-Nitroaniline	50.	U
83-32-9-----	Acenaphthene	10.	U
51-28-5-----	2,4-Dinitrophenol	50.	U
100-02-7-----	4-Nitrophenol	50.	U
132-64-9-----	Dibenzofuran	10.	U
121-14-2-----	2,4-Dinitrotoluene	10.	U
84-66-2-----	Diethylphthalate	10.	U
7005-72-3-----	4-Chlorophenyl-phenylether	10.	U
86-73-7-----	Fluorene	10.	U
100-01-6-----	4-Nitroaniline	50.	U
534-52-1-----	4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----	N-Nitrosodiphenylamine	10.	U
101-55-3-----	4-Bromophenyl-phenylether	10.	U
118-74-1-----	Hexachlorobenzene	10.	U
87-86-5-----	Pentachlorophenol	50.	U
85-01-8-----	Phenanthrene	10.	U
120-12-7-----	Anthracene	10.	U
84-74-2-----	Di-n-butylphthalate	10.	U
206-44-0-----	Fluoranthene	10.	U
129-00-0-----	Pyrene	10.	U
85-68-7-----	Butylbenzylphthalate	10.	U
91-94-1-----	3,3'-Dichlorobenzidine	20.	U
56-55-3-----	Benzo(a)anthracene	10.	U
218-01-9-----	Chrysene	10.	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	61.	U
117-84-0-----	Di-n-octylphthalate	10.	U
205-99-2-----	Benzo(b)fluoranthene	10.	U
207-08-9-----	Benzo(k)fluoranthene	10.	U
50-32-8-----	Benzo(a)pyrene	10.	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----	Dibenzo(a,h)anthracene	10.	U
191-24-2-----	Benzo(g,h,i)perylene	10.	U

CAE 2/5/91

(1) - Cannot be separated from diphenylamine

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V131S1FB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3391.3

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2656 0000 32

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

PC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
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6.				
7.				
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27.				
28.				
29.				
30.				

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

VA SAMPLE NO.

V131S1FB RE

ELE  
6/25

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3391.3 RE

ELE  
6/25/91

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2686

Level: (low/med) LOW

Date Received: 5/11/91

0000 37

Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/17/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

108-95-2-----	Phenol	10.	U
111-44-4-----	bis(2-Chloroethyl) ether	10.	U
95-57-8-----	2-Chlorophenol	10.	U
541-73-1-----	1,3-Dichlorobenzene	10.	U
106-46-7-----	1,4-Dichlorobenzene	10.	U
100-51-6-----	Benzyl alcohol	10.	U
95-50-1-----	1,2-Dichlorobenzene	10.	U
95-48-7-----	2-Methylphenol	10.	U
108-60-1-----	bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----	4-Methylphenol	10.	U
621-64-7-----	N-Nitroso-di-n-propylamine	10.	U
67-72-1-----	Hexachloroethane	10.	U
98-95-3-----	Nitrobenzene	10.	U
78-59-1-----	Isophorone	10.	U
88-75-5-----	2-Nitrophenol	10.	U
105-67-9-----	2,4-Dimethylphenol	10.	U
65-85-0-----	Benzoic acid	50.	U
111-91-1-----	bis(2-Chloroethoxy) methane	10.	U
120-83-2-----	2,4-Dichlorophenol	10.	U
120-82-1-----	1,2,4-Trichlorobenzene	10.	U
91-20-3-----	Naphthalene	10.	U
106-47-8-----	4-Chloroaniline	10.	U
87-68-3-----	Hexachlorobutadiene	10.	U
59-50-7-----	4-Chloro-3-methylphenol	10.	U
91-57-6-----	2-Methylnaphthalene	10.	U
77-47-4-----	Hexachlorocyclopentadiene	10.	U
88-06-2-----	2,4,6-Trichlorophenol	10.	U
95-95-4-----	2,4,5-Trichlorophenol	50.	U
91-58-7-----	2-Chloronaphthalene	10.	U
88-74-4-----	2-Nitroaniline	50.	U
131-11-3-----	Dimethylphthalate	10.	U
208-96-8-----	Acenaphthylene	10.	U
606-20-2-----	2,6-Dinitrotoluene	10.	U

FORM I SV-1

1/87 Rev.

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131S1FB RE

RL  
6/25/91

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3391.3 RE

6/25/91  
RL

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2686

Level: (low/med) LOW

Date Received: 5/11/91

0000 38

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/17/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

99-09-2-----	3-Nitroaniline	50.	U
83-32-9-----	Acenaphthene	10.	U
51-28-5-----	2,4-Dinitrophenol	50.	U
100-02-7-----	4-Nitrophenol	50.	U
132-64-9-----	Dibenzofuran	10.	U
121-14-2-----	2,4-Dinitrotoluene	10.	U
84-66-2-----	Diethylphthalate	10.	U
7005-72-3-----	4-Chlorophenyl-phenylether	10.	U
86-73-7-----	Fluorene	10.	U
100-01-6-----	4-Nitroaniline	50.	U
534-52-1-----	4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----	N-Nitrosodiphenylamine	10.	U
101-55-3-----	4-Bromophenyl-phenylether	10.	U
118-74-1-----	Hexachlorobenzene	10.	U
87-86-5-----	Pentachlorophenol	50.	U
85-01-8-----	Phenanthrene	10.	U
120-12-7-----	Anthracene	10.	U
84-74-2-----	Di-n-butylphthalate	10.	U
206-44-0-----	Fluoranthene	10.	U
129-00-0-----	Pyrene	10.	U
85-68-7-----	Butylbenzylphthalate	10.	U
91-94-1-----	3,3'-Dichlorobenzidine	20.	U
56-55-3-----	Benzo(a)anthracene	10.	U
218-01-9-----	Chrysene	10.	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	48.	
117-84-0-----	Di-n-octylphthalate	10.	U
205-99-2-----	Benzo(b)fluoranthene	10.	U
207-08-9-----	Benzo(k)fluoranthene	10.	U
50-32-8-----	Benzo(a)pyrene	10.	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----	Dibenzo(a,h)anthracene	10.	U
191-24-2-----	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TELEATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V131S1FB RE

RL  
6/25/91

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 0000 39

Matrix: (soil/water) WATER

Lab Sample ID: 3391.3 RE

RL  
6/25/91

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2686

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/17/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found: 1

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. - -	UNKNOWN	7.39	10.	J
2.				
3.				
4.	Same peak visible in SVBLK 1.			
5.	CAE 7/5/91			
6.				
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FORM I SV-TIC

1/87 Rev.

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

V131S1FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3392.1

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2657 0000 46

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

PC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

108-95-2-----Phenol	10.	U
111-44-4-----bis(2-Chloroethyl) ether	10.	U
95-57-8-----2-Chlorophenol	10.	U
541-73-1-----1,3-Dichlorobenzene	10.	U
106-46-7-----1,4-Dichlorobenzene	10.	U
100-51-6-----Benzyl alcohol	10.	U
95-50-1-----1,2-Dichlorobenzene	10.	U
95-48-7-----2-Methylphenol	10.	U
108-60-1-----bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----4-Methylphenol	10.	U
621-64-7-----N-Nitroso-di-n-propylamine	10.	U
67-72-1-----Hexachloroethane	10.	U
98-95-3-----Nitrobenzene	10.	U
78-59-1-----Isophorone	10.	U
88-75-5-----2-Nitrophenol	10.	U
105-67-9-----2,4-Dimethylphenol	10.	U
65-85-0-----Benzoic acid	50.	U
111-91-1-----bis(2-Chloroethoxy) methane	10.	U
120-83-2-----2,4-Dichlorophenol	10.	U
120-82-1-----1,2,4-Trichlorobenzene	10.	U
91-20-3-----Naphthalene	10.	U
106-47-8-----4-Chloroaniline	10.	U
87-68-3-----Hexachlorobutadiene	10.	U
59-50-7-----4-Chloro-3-methylphenol	10.	U
91-57-6-----2-Methylnaphthalene	10.	U
77-47-4-----Hexachlorocyclopentadiene	10.	U
88-06-2-----2,4,6-Trichlorophenol	10.	U
95-95-4-----2,4,5-Trichlorophenol	50.	U
91-58-7-----2-Chloronaphthalene	10.	U
88-74-4-----2-Nitroaniline	50.	U
131-11-3-----Dimethylphthalate	10.	U
208-96-8-----Acenaphthylene	10.	U
606-20-2-----2,6-Dinitrotoluene	10.	U

OK  
6/25/91

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

V131S1FD

Lab Name: PACE Contract:   
 Lab Code: PACE Case No.: EPC SAS No.: SDG No.:   
 Matrix: (soil/water) WATER Lab Sample ID: 3392.1   
 Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2657 0000 47   
 Level: (low/med) LOW Date Received: 5/11/91   
 % Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91   
 Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91   
 PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:   
 (ug/L or ug/Kg) UG/L Q

99-09-2-----3-Nitroaniline	50.	U
83-32-9-----Acenaphthene	10.	U
51-28-5-----2,4-Dinitrophenol	50.	U
100-02-7-----4-Nitrophenol	50.	U
132-64-9-----Dibenzofuran	10.	U
121-14-2-----2,4-Dinitrotoluene	10.	U
84-66-2-----Diethylphthalate	10.	U
7005-72-3-----4-Chlorophenyl-phenylether	10.	U
86-73-7-----Fluorene	10.	U
100-01-6-----4-Nitroaniline	50.	U
534-52-1-----4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----N-Nitrosodiphenylamine	10.	U
101-55-3-----4-Bromophenyl-phenylether	10.	U
118-74-1-----Hexachlorobenzene	10.	U
87-86-5-----Pentachlorophenol	50.	U
85-01-8-----Phenanthrene	10.	U
120-12-7-----Anthracene	10.	U
84-74-2-----Di-n-butylphthalate	10.	U
206-44-0-----Fluoranthene	10.	U
129-00-0-----Pyrene	10.	U
85-68-7-----Butylbenzylphthalate	10.	U
91-94-1-----3,3'-Dichlorobenzidine	20.	U
56-55-3-----Benzo(a)anthracene	10.	U
218-01-9-----Chrysene	10.	U
117-81-7-----bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----Di-n-octylphthalate	10.	U
205-99-2-----Benzo(b)fluoranthene	10.	U
207-08-9-----Benzo(k)fluoranthene	10.	U
50-32-8-----Benzo(a)pyrene	10.	U
193-39-5-----Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----Dibenzo(a,h)anthracene	10.	U
191-24-2-----Benzo(g,h,i)perylene	10.	U

CAE 2/5/91

(1) - Cannot be separated from diphenylamine

FORM I SV-2

1/87 Rev.

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V131S1FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3392.1

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2657 0000 48

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found: 2

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	2.44	8.	J
2.	UNKNOWN	19.46	100.	J
3.				
4.				
5.				
6.	Some peak in SBLK1, FR			
7.				
8.				
9.				
10.				
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

V131S1FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3390.5

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2655

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

DOC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

108-95-2-----	Phenol	10.	U
111-44-4-----	bis(2-Chloroethyl) ether	10.	U
95-57-8-----	2-Chlorophenol	10.	U
541-73-1-----	1,3-Dichlorobenzene	10.	U
106-46-7-----	1,4-Dichlorobenzene	10.	U
100-51-6-----	Benzyl alcohol	10.	U
95-50-1-----	1,2-Dichlorobenzene	10.	U
95-48-7-----	2-Methylphenol	10.	U
108-60-1-----	bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----	4-Methylphenol	10.	U
621-64-7-----	N-Nitroso-di-n-propylamine	10.	U
67-72-1-----	Hexachloroethane	10.	U
98-95-3-----	Nitrobenzene	10.	U
78-59-1-----	Isophorone	10.	U
88-75-5-----	2-Nitrophenol	10.	U
105-67-9-----	2,4-Dimethylphenol	10.	U
65-85-0-----	Benzoic acid	50.	U
111-91-1-----	bis(2-Chloroethoxy) methane	10.	U
120-83-2-----	2,4-Dichlorophenol	10.	U
120-82-1-----	1,2,4-Trichlorobenzene	10.	U
91-20-3-----	Naphthalene	10.	U
106-47-8-----	4-Chloroaniline	10.	U
87-68-3-----	Hexachlorobutadiene	10.	U
59-50-7-----	4-Chloro-3-methylphenol	10.	U
91-57-6-----	2-Methylnaphthalene	10.	U
77-47-4-----	Hexachlorocyclopentadiene	10.	U
88-06-2-----	2,4,6-Trichlorophenol	10.	U
95-95-4-----	2,4,5-Trichlorophenol	50.	U
91-58-7-----	2-Chloronaphthalene	10.	U
88-74-4-----	2-Nitroaniline	50.	U
131-11-3-----	Dimethylphthalate	10.	U
208-96-8-----	Acenaphthylene	10.	U
606-20-2-----	2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131S1FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3390.0000 57

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2655

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

99-09-2-----	3-Nitroaniline	50.	U
83-32-9-----	Acenaphthene	10.	U
51-28-5-----	2,4-Dinitrophenol	50.	U
100-02-7-----	4-Nitrophenol	50.	U
132-64-9-----	Dibenzofuran	10.	U
121-14-2-----	2,4-Dinitrotoluene	10.	U
84-66-2-----	Diethylphthalate	10.	U
7005-72-3-----	4-Chlorophenyl-phenylether	10.	U
86-73-7-----	Fluorene	10.	U
100-01-6-----	4-Nitroaniline	50.	U
534-52-1-----	4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----	N-Nitrosodiphenylamine	10.	U
101-55-3-----	4-Bromophenyl-phenylether	10.	U
118-74-1-----	Hexachlorobenzene	10.	U
87-86-5-----	Pentachlorophenol	50.	U
85-01-8-----	Phenanthrene	10.	U
120-12-7-----	Anthracene	10.	U
84-74-2-----	Di-n-butylphthalate	10.	U
206-44-0-----	Fluoranthene	10.	U
129-00-0-----	Pyrene	10.	U
85-68-7-----	Butylbenzylphthalate	10.	U
91-94-1-----	3,3'-Dichlorobenzidine	20.	U
56-55-3-----	Benzo(a)anthracene	10.	U
218-01-9-----	Chrysene	10.	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----	Di-n-octylphthalate	10.	U
205-99-2-----	Benzo(b)fluoranthene	10.	U
207-08-9-----	Benzo(k)fluoranthene	10.	U
50-32-8-----	Benzo(a)pyrene	10.	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----	Dibenzo(a,h)anthracene	10.	U
191-24-2-----	Benzo(g,h,i)perylene	10.	U

ca 7/5/91

(1) - Cannot be separated from diphenylamine

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TELEATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V131S1FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3390.0000 58

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2655

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found: 1

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. - -	UNKNOWN	19.46	100.	J
2.				
3.				
4.				
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

\ SAMPLE NO.

V140S1FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3412.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2689

0000 65

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/18/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

108-95-2-----	Phenol	10.	U
111-44-4-----	bis(2-Chloroethyl) ether	10.	U
95-57-8-----	2-Chlorophenol	10.	U
541-73-1-----	1,3-Dichlorobenzene	10.	U
106-46-7-----	1,4-Dichlorobenzene	10.	U
100-51-6-----	Benzyl alcohol	10.	U
95-50-1-----	1,2-Dichlorobenzene	10.	U
95-48-7-----	2-Methylphenol	10.	U
108-60-1-----	bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----	4-Methylphenol	10.	U
621-64-7-----	N-Nitroso-di-n-propylamine	10.	U
67-72-1-----	Hexachloroethane	10.	U
98-95-3-----	Nitrobenzene	10.	U
78-59-1-----	Isophorone	10.	U
88-75-5-----	2-Nitrophenol	10.	U
105-67-9-----	2,4-Dimethylphenol	10.	U
65-85-0-----	Benzoic acid	50.	U
111-91-1-----	bis(2-Chloroethoxy) methane	10.	U
120-83-2-----	2,4-Dichlorophenol	10.	U
120-82-1-----	1,2,4-Trichlorobenzene	10.	U
91-20-3-----	Naphthalene	10.	U
106-47-8-----	4-Chloroaniline	10.	U
87-68-3-----	Hexachlorobutadiene	10.	U
59-50-7-----	4-Chloro-3-methylphenol	10.	U
91-57-6-----	2-Methylnaphthalene	10.	U
77-47-4-----	Hexachlorocyclopentadiene	10.	U
88-06-2-----	2,4,6-Trichlorophenol	10.	U
95-95-4-----	2,4,5-Trichlorophenol	50.	U
91-58-7-----	2-Chloronaphthalene	10.	U
88-74-4-----	2-Nitroaniline	50.	U
131-11-3-----	Dimethylphthalate	10.	U
208-96-8-----	Acenaphthylene	10.	U
606-20-2-----	2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V140S1FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3412.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D268000 66

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/18/91

PC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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99-09-2-----	3-Nitroaniline	50.	U
83-32-9-----	Acenaphthene	10.	U
51-28-5-----	2,4-Dinitrophenol	50.	U
100-02-7-----	4-Nitrophenol	50.	U
132-64-9-----	Dibenzofuran	10.	U
121-14-2-----	2,4-Dinitrotoluene	10.	U
84-66-2-----	Diethylphthalate	10.	U
7005-72-3-----	4-Chlorophenyl-phenylether	10.	U
86-73-7-----	Fluorene	10.	U
100-01-6-----	4-Nitroaniline	50.	U
534-52-1-----	4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----	N-Nitrosodiphenylamine	10.	U
101-55-3-----	4-Bromophenyl-phenylether	10.	U
118-74-1-----	Hexachlorobenzene	10.	U
87-86-5-----	Pentachlorophenol	50.	U
85-01-8-----	Phenanthrene	10.	U
120-12-7-----	Anthracene	10.	U
84-74-2-----	Di-n-butylphthalate	10.	U
206-44-0-----	Fluoranthene	10.	U
129-00-0-----	Pyrene	10.	U
85-68-7-----	Butylbenzylphthalate	10.	U
91-94-1-----	3,3'-Dichlorobenzidine	20.	U
56-55-3-----	Benzo(a)anthracene	10.	U
218-01-9-----	Chrysene	10.	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----	Di-n-octylphthalate	10.	U
205-99-2-----	Benzo(b)fluoranthene	10.	U
207-08-9-----	Benzo(k)fluoranthene	10.	U
50-32-8-----	Benzo(a)pyrene	10.	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----	Dibenzo(a,h)anthracene	10.	U
191-24-2-----	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V140S1FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3412.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2689 0000 67

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/18/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

V140S1FS

Lab Name: PACE Contract:   
 Lab Code: PACE Case No.: EPC SAS No.: SDG No.:   
 Matrix: (soil/water) WATER Lab Sample ID: 3411.0000 71   
 Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2658   
 Level: (low/med) LOW Date Received: 5/11/91   
 Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91   
 Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91   
 PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L Q

108-95-2-----	Phenol	10.	U
111-44-4-----	bis(2-Chloroethyl) ether	10.	U
95-57-8-----	2-Chlorophenol	10.	U
541-73-1-----	1,3-Dichlorobenzene	10.	U
106-46-7-----	1,4-Dichlorobenzene	10.	U
100-51-6-----	Benzyl alcohol	10.	U
95-50-1-----	1,2-Dichlorobenzene	10.	U
95-48-7-----	2-Methylphenol	10.	U
108-60-1-----	bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----	4-Methylphenol	10.	U
621-64-7-----	N-Nitroso-di-n-propylamine	10.	U
67-72-1-----	Hexachloroethane	10.	U
98-95-3-----	Nitrobenzene	10.	U
78-59-1-----	Isophorone	10.	U
88-75-5-----	2-Nitrophenol	10.	U
105-67-9-----	2,4-Dimethylphenol	10.	U
65-85-0-----	Benzoic acid	50.	U
111-91-1-----	bis(2-Chloroethoxy) methane	10.	U
120-83-2-----	2,4-Dichlorophenol	10.	U
120-82-1-----	1,2,4-Trichlorobenzene	10.	U
91-20-3-----	Naphthalene	10.	U
106-47-8-----	4-Chloroaniline	10.	U
87-68-3-----	Hexachlorobutadiene	10.	U
59-50-7-----	4-Chloro-3-methylphenol	10.	U
91-57-6-----	2-Methylnaphthalene	10.	U
77-47-4-----	Hexachlorocyclopentadiene	10.	U
88-06-2-----	2,4,6-Trichlorophenol	10.	U
95-95-4-----	2,4,5-Trichlorophenol	50.	U
91-58-7-----	2-Chloronaphthalene	10.	U
88-74-4-----	2-Nitroaniline	50.	U
131-11-3-----	Dimethylphthalate	10.	U
208-96-8-----	Acenaphthylene	10.	U
606-20-2-----	2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

V140S1FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 0000 72

Matrix: (soil/water) WATER

Lab Sample ID: 3411.1

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2658

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

PC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

99-09-2-----	3-Nitroaniline	50.	U
83-32-9-----	Acenaphthene	10.	U
51-28-5-----	2,4-Dinitrophenol	50.	U
100-02-7-----	4-Nitrophenol	50.	U
132-64-9-----	Dibenzofuran	10.	U
121-14-2-----	2,4-Dinitrotoluene	10.	U
84-66-2-----	Diethylphthalate	10.	U
7005-72-3-----	4-Chlorophenyl-phenylether	10.	U
86-73-7-----	Fluorene	10.	U
100-01-6-----	4-Nitroaniline	50.	U
534-52-1-----	4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----	N-Nitrosodiphenylamine	10.	U
101-55-3-----	4-Bromophenyl-phenylether	10.	U
118-74-1-----	Hexachlorobenzene	10.	U
87-86-5-----	Pentachlorophenol	50.	U
85-01-8-----	Phenanthrene	10.	U
120-12-7-----	Anthracene	10.	U
84-74-2-----	Di-n-butylphthalate	10.	U
206-44-0-----	Fluoranthene	10.	U
129-00-0-----	Pyrene	10.	U
85-68-7-----	Butylbenzylphthalate	10.	U
91-94-1-----	3,3'-Dichlorobenzidine	20.	U
56-55-3-----	Benzo(a)anthracene	10.	U
218-01-9-----	Chrysene	10.	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----	Di-n-octylphthalate	10.	U
205-99-2-----	Benzo(b)fluoranthene	10.	U
207-08-9-----	Benzo(k)fluoranthene	10.	U
50-32-8-----	Benzo(a)pyrene	10.	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----	Dibenzo(a,h)anthracene	10.	U
191-24-2-----	Benzo(g,h,i)perylene	10.	U

ca 7/5/91

(1) - Cannot be separated from diphenylamine

FORM I SV-2

1/87 Rev.



1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TEMPORARILY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V140S1FS

Lab Name: PACE Contract: \_\_\_\_\_

Lab Code: PACE Case No.: EPC SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) WATER Lab Sample ID: 3411.1

Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2658 0000 73

Level: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SA SAMPLE NO.

V140S1FS RE

6/25/91  
RE

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3411.1 RE

RE  
6/25/91

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D26870000 77

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/17/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

108-95-2-----	Phenol	10.	U
111-44-4-----	bis(2-Chloroethyl) ether	10.	U
95-57-8-----	2-Chlorophenol	10.	U
541-73-1-----	1,3-Dichlorobenzene	10.	U
106-46-7-----	1,4-Dichlorobenzene	10.	U
100-51-6-----	Benzyl alcohol	10.	U
95-50-1-----	1,2-Dichlorobenzene	10.	U
95-48-7-----	2-Methylphenol	10.	U
108-60-1-----	bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----	4-Methylphenol	10.	U
621-64-7-----	N-Nitroso-di-n-propylamine	10.	U
67-72-1-----	Hexachloroethane	10.	U
98-95-3-----	Nitrobenzene	10.	U
78-59-1-----	Isophorone	10.	U
88-75-5-----	2-Nitrophenol	10.	U
105-67-9-----	2,4-Dimethylphenol	10.	U
65-85-0-----	Benzoic acid	50.	U
111-91-1-----	bis(2-Chloroethoxy) methane	10.	U
120-83-2-----	2,4-Dichlorophenol	10.	U
120-82-1-----	1,2,4-Trichlorobenzene	10.	U
91-20-3-----	Naphthalene	10.	U
106-47-8-----	4-Chloroaniline	10.	U
87-68-3-----	Hexachlorobutadiene	10.	U
59-50-7-----	4-Chloro-3-methylphenol	10.	U
91-57-6-----	2-Methylnaphthalene	10.	U
77-47-4-----	Hexachlorocyclopentadiene	10.	U
88-06-2-----	2,4,6-Trichlorophenol	10.	U
95-95-4-----	2,4,5-Trichlorophenol	50.	U
91-58-7-----	2-Chloronaphthalene	10.	U
88-74-4-----	2-Nitroaniline	50.	U
131-11-3-----	Dimethylphthalate	10.	U
208-96-8-----	Acenaphthylene	10.	U
606-20-2-----	2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V140S1FSRE

ELC  
6/75

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3411.1EE

6/25/91

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2687

Level: (low/med) LOW

Date Received: 0000 78  
5/11/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/17/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

99-09-2-----3-Nitroaniline	50.	U
83-32-9-----Acenaphthene	10.	U
51-28-5-----2,4-Dinitrophenol	50.	U
100-02-7-----4-Nitrophenol	50.	U
132-64-9-----Dibenzofuran	10.	U
121-14-2-----2,4-Dinitrotoluene	10.	U
84-66-2-----Diethylphthalate	10.	U
7005-72-3-----4-Chlorophenyl-phenylether	10.	U
86-73-7-----Fluorene	10.	U
100-01-6-----4-Nitroaniline	50.	U
534-52-1-----4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----N-Nitrosodiphenylamine	10.	U
101-55-3-----4-Bromophenyl-phenylether	10.	U
118-74-1-----Hexachlorobenzene	10.	U
87-86-5-----Pentachlorophenol	50.	U
85-01-8-----Phenanthrene	10.	U
120-12-7-----Anthracene	10.	U
84-74-2-----Di-n-butylphthalate	10.	U
206-44-0-----Fluoranthene	10.	U
129-00-0-----Pyrene	10.	U
85-68-7-----Butylbenzylphthalate	10.	U
91-94-1-----3,3'-Dichlorobenzidine	20.	U
56-55-3-----Benzo(a)anthracene	10.	U
218-01-9-----Chrysene	10.	U
117-81-7-----bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----Di-n-octylphthalate	20.	U
205-99-2-----Benzo(b)fluoranthene	10.	U
207-08-9-----Benzo(k)fluoranthene	10.	U
50-32-8-----Benzo(a)pyrene	10.	U
193-39-5-----Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----Dibenzo(a,h)anthracene	10.	U
191-24-2-----Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

FORM I SV-2

1/87 Rev.

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
RELATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: PACE

Contract:

V140S1FS 2E

RE  
6/25

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3411.1 2E

RE  
6/25/91

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2687000 79

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/17/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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DATA VALIDATION REPORT

FOR

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

PESTICIDE/PCB ANALYSIS DATA

Samples Collected May 10, 14, and 19, 1991

Chemical Analyses Performed by:

PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

No pesticide/PCB target compound list (TCL) compounds were detected in any of the samples in Laboratory Project Numbers 810511.503, 810515.505, and 810519.500. Detection limits for endrin in Samples V131P10FS, V131P10FD, V131P10FB, and V140P10FS were rejected. No other qualifiers were applied to the data.

Problems identified on the Chain of Custody (COC) records include: (1) transfer signatures are incomplete, missing affiliations of the person(s) involved and in some cases missing a "Relinquished by" or "Accepted by" signature in a pair; (2) cold storage in the field is not clearly documented; (3) separate entries should not be made for MS/MSD samples; (4) corrections to the forms are made incorrectly, and are not initialled and dated; (5) the sampler name and signature at the top of the form should include the full name, not just a first initial; and (6) the sample identifications used on the Form I's in the data packages do not match the identifications listed on the COC's.

Validation of the data packages is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable (Note: Analyte may or may not be present)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample detection limit or the sample quantitation limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying copies of the Form I's from the data packages to qualify some of the results as appropriate based on the findings of the data review.

### Case Narrative

Twenty-one treatment system samples (including separate samples for four matrix spike/matrix spike duplicate pairs) were collected on May 10, May 14, and May 19, 1991; the samples were received at Pace, Inc. on May 11, May 15, and May 19, respectively. Analysis of pesticides and PCB's according to EPA Contract Laboratory Program (CLP) Statement of Work 2/88 was performed.

The following samples are included in these three Sample Delivery Groups (SDG's):

<u>Client ID</u>	<u>Lab ID</u>	<u>Lab Project #</u>	<u>Collected</u>
V131P1FS	3393	810511.503	5/10/91
V131P1FB	3394	810511.503	5/10/91
V131P1FD	3395	810511.503	5/10/91
V140P1FS	3413	810511.503	5/10/91
V140P1FD	3414	810511.503	5/10/91
V140P5FS	3517	810515.505	5/14/91
V131P5FS	3518	810515.505	5/14/91
V131P5FD	3519	810515.505	5/14/91
V131P5FB	3520	810515.505	5/14/91
V140P10FS	3697	810519.500	5/19/91
V131P10FS	3698	810519.500	5/19/91
V131P10FD	3699	810519.500	5/19/91
V131P10FB	3700	810519.500	5/19/91

Pesticide/PCB analysis results for these samples were reported by the laboratory under the three project numbers listed above.

## PESTICIDE/PCBs

The areas reviewed during the pesticide/PCB validation procedure are listed below.

- I. Holding Times
- II. Pesticides Instrument Performance
- III. Calibration
  - A. Initial
  - B. Analytical Sequence
  - C. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Compound Identification
- IX. Compound Quantitation and Reported Detection Limits
- X. Overall Assessment



## **I. Holding Times**

All samples in the three Sample Delivery Groups were extracted and analyzed within the prescribed holding times.

None of the Chain of Custody (COC) records indicate that the samples were placed in cold storage (4°C) at the time of collection, although the use of coolers is indicated by the recorded temperatures upon receipt at the laboratory. Cold storage is a form of preservation and must be documented on the COC, or the validator must assume it was not performed. No qualifiers are applied in this case.

## **II. Pesticides Instrument Performance**

All samples in the three SDG's were analyzed under the same standard series, on 6/3-5/91. All DDT retention times exceed 15 minutes; all standard analytes are within the established retention time windows and are correctly transcribed from the raw data to Form IX, and all calculated breakdowns for DDT and Endrin are less than 20% for this 72-hour series.

## **III. Calibration**

### **A. Initial**

All Percent Relative Standard Deviations (%RSD) on the quantitation column (DB-608) were less than 10%. %RSD's for aldrin, endrin and DDT were 19%, 26%, and 15%, respectively on the DB-5 column, but this column was not used for any quantitations. No data are affected.

### **B. Analytical Sequence**

The correct analytical sequence was followed throughout the 72-hour analysis series. Both INDA and INDB standards were run at the intervals where only one or the other is required by the SOW; all criteria were met for both standards in every case. No data are affected.

### **C. Continuing**

All %D values for standard analytes on the quantitation column (DB-608) were less than 15%. All %D values on the confirmation column (DB-5) were less than 20%.

Calibration factors could not be confirmed for all analytes using the Standard Concentration Tables provided on pages 53, 44, and 45 of the three data packages. Upon discussion with laboratory personnel, it was determined that the wrong concentration table had been inserted into the data reports; a new table was provided to this validator on 7/5/91, and is attached to this validation report. It replaces pages 53, 44, and 45 in the data packages for laboratory project numbers 810511.503, 810515.505, and 810519.500,

respectively. Calibration factors were completely verifiable using the concentrations from the revised table. No data are affected.

#### IV. Blanks

No target analytes were detected and confirmed in the method blank or field blank associated with any of the three SDG's; method blanks were prepared at the appropriate frequency with each of the three extraction batches on 5/15, 5/20, and 5/22/91.

#### V. Surrogate Recovery

All surrogate recoveries in the three SDG's were within established advisory guidelines for dibutylchlorendate.

#### VI. Matrix Spike/Matrix Spike Duplicate

Four MS/MSD pairs were analyzed in association with the three SDG's. Recoveries and Relative Percent Difference (RPD) values were within criteria except for the following:

##### Project #810511.503

V131P1FS MS/MSD:	Endrin	%R = 53, 28% (QC limits 56-121%)
		RPD = 61% (QC limit 21%)
	gamma-BHC	RPD = 18% (QC limit 15%)
	Dieldrin	RPD = 24% (QC limit 18%)

V140P1FS MS/MSD:	Endrin	%R = 14, 15% (QC limits 56-121%)
	gamma-BHC	%R = 50% (QC limits 56-123%)
		RPD = 22% (QC limit 15%)
	Dieldrin	%R = 46% (QC limits 52-126%)
		RPD = 23% (QC limit 18%)
	Heptachlor	RPD = 26% (QC limit 20%)
	DDT	RPD = 29% (QC limit 27%)

##### Project #810515.505

V131P5FS MS/MSD:	gamma-BHC	%R = 48, 29% (QC limits 56-123%)
		RPD = 49% (QC limit 15%)
	Dieldrin	%R = 51, 28% (QC limits 52-126%)
		RPD = 57% (QC limit 18%)
	Endrin	%R = 55, 32% (QC limits 56-121%)
		RPD = 54% (QC limit 21%)
	Aldrin	%R = 26% (QC limits 40-120%)
		RPD = 54% (QC limit 22%)
	Heptachlor	%R = 30% (QC limits 40-131%)
		RPD = 51% (QC limit 20%)
	DDT	%R = 28% (QC limits 38-127%)
		RPD = 60% (QC limit 27%)

Project #810519.500

V131P10FS MS/MSD: gamma-BHC	%R = 55, 49% (QC limits 56-123%)
Dieldrin	%R = 37, 49% (QC limits 52-126%)
	RPD = 26% (QC limit 18%)
Endrin	%R = 4, 4% (QC limits 56-121%)

Although a number of low recoveries were observed most are above 10% and therefore do not require that qualifiers be applied since no positive results were detected in the samples. In Project #810519.500, however, endrin recoveries dropped to 4% in both the MS and MSD; detection limits for endrin are therefore rejected in all four samples in that SDG .

It is noted that the %R values found on the Form III's in each data package do not follow directly from the MS and MSD concentrations listed on these forms; the concentrations have been rounded, and the recoveries were calculated prior to the rounding. None of the differences is significant; it is recommended that the laboratory record values on this form that do allow direct calculation of the reported recoveries.

#### VII. Field Duplicates

Four field duplicate pairs were analyzed in the three SDG's; no positive results were detected in any of the samples.

#### VIII. Compound Identifications

Spike compounds were correctly identified and confirmed in each MS/MSD pair. No target compounds were identified and confirmed in any of the samples in the three SDG's.

#### IX. Compound Quantitation and Reported Detection Limits

All spike compound results and reported sample detection limits are correctly calculated and reported.

#### X. Overall Assessment

No positive results were found for any of the samples reported in Project Numbers 810511.503, 810515.505, or 810519.500. Results are usable as reported except for endrin results in V131P10FS, V131P10FD, V131P10FB, and V140P10FS, which are rejected due to matrix spike recoveries below 10%. No other qualifiers are applied.

Incomplete, unclear, or inaccurate Chain of Custody (COC) records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the COC records included in the three data packages reviewed here:

1. Transfer signatures are incomplete: affiliations of the persons involved are not included, and some "Relinquished by" or "Accepted by" signatures are missing.

2. Cold storage is not clearly documented.

3. Sample identifications used on the Form I's do not match the sample identifications found on the COC's. Specifically, the "P1", "P5", or "P10" portion of the COC identification is left off the Form I's. This leaves no distinction between the samples from the three SDG's on the Form I's, since the rest of the sample numbers are identical. The Form I's attached to this validation report have been corrected to reflect the complete sample identification numbers as found on the COC's.

4. Corrections to the forms are done as "Write-overs", and are not initialled or dated.

5. The sampler name and signature at the top of the form(s) should include the full name, not just a first initial.

6. The MS/MSD pairs are laboratory-initiated quality control samples; separate entries should not be made for these samples on the COC records.

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

VA SAMPLE NO.

V131FS

00021

Lab Name: PACE

Contract: EPC

Lab Code: PACE

Case No.:

SAS No.:

SDG No.: V131P1FS

Matrix: (soil/water) WATER

Lab Sample ID: 3393.0

CASE  
7/4/91

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66592

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 4/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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319-84-6-----Alpha-BHC	.050	U
319-85-7-----Beta-BHC	.050	U
319-86-8-----Delta-BHC	.050	U
58-89-9-----Gamma-BHC	.050	U
76-44-8-----Heptachlor	.050	U
309-00-2-----Aldrin	.050	U
1024-57-3-----Heptachlor Epoxide	.050	U
959-98-8-----Endosulfan I	.050	U
60-57-1-----Dieldrin	.10	U
72-55-9-----4,4'-DDE	.10	U
72-20-8-----Endrin	.10	U
33213-65-9-----Endosulfan II	.10	U
72-54-8-----4,4'-DDD	.10	U
1031-07-8-----Endosulfan Sulfate	.10	U
50-29-3-----4,4'-DDT	.10	U
72-43-5-----Methoxychlor	.50	U
53494-70-5-----Endrin Ketone	.10	U
5103-71-9-----alpha-Chlordane	.50	U
5103-74-2-----gamma-Chlordane	.50	U
8001-35-2-----Toxaphene	1.0	U
12674-11-2-----Arochlor-1016	.50	U
11104-28-2-----Arochlor-1221	.50	U
11141-16-5-----Arochlor-1232	.50	U
53469-21-9-----Arochlor-1242	.50	U
12672-29-6-----Arochlor-1248	.50	U
11097-69-1-----Arochlor-1254	1.0	U
11096-82-5-----Arochlor-1260	1.0	U

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

Lab Name: PACE

Contract: EPC

V131FB 00027

Lab Code: PACE

Case No.:

SAS No.:

SDG No.: V131PIFB

Matrix: (soil/water) WATER

Lab Sample ID: 3394.8 *Case 7/4/91*

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66585

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 3/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	.050	U
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	.10	U
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	.10	U
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

VIA SAMPLE NO.

Lab Name: PACE

Contract: EPC

V131FD 00034

Lab Code: PACE

Case No.:

SAS No.:

SDG No.: V131P1FD

Matrix: (soil/water) WATER

Lab Sample ID: 3395.6 *CASE 7/4/91*

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66594

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 4/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

319-84-6-----Alpha-BHC	.050	U
319-85-7-----Beta-BHC	.050	U
319-86-8-----Delta-BHC	.050	U
58-89-9-----Gamma-BHC	.050	U
76-44-8-----Heptachlor	.050	U
309-00-2-----Aldrin	.050	U
1024-57-3-----Heptachlor Epoxide	.050	U
959-98-8-----Endosulfan I	.050	U
60-57-1-----Dieldrin	.10	U
72-55-9-----4,4'-DDE	.10	U
72-20-8-----Endrin	.10	U
33213-65-9-----Endosulfan II	.10	U
72-54-8-----4,4'-DDD	.10	U
1031-07-8-----Endosulfan Sulfate	.10	U
50-29-3-----4,4'-DDT	.10	U
72-43-5-----Methoxychlor	.50	U
53494-70-5-----Endrin Ketone	.10	U
5103-71-9-----alpha-Chlordane	.50	U
5103-74-2-----gamma-Chlordane	.50	U
8001-35-2-----Toxaphene	1.0	U
12674-11-2-----Arochlor-1016	.50	U
11104-28-2-----Arochlor-1221	.50	U
11141-16-5-----Arochlor-1232	.50	U
53469-21-9-----Arochlor-1242	.50	U
12672-29-6-----Arochlor-1248	.50	U
11097-69-1-----Arochlor-1254	1.0	U
11096-82-5-----Arochlor-1260	1.0	U

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

-7A SAMPLE NO.

Lab Name: PACE

Contract: EPC

V140FS 00040

Lab Code: PACE

Case No.:

SAS No.:

SDG No.: V140PIFS

Matrix: (soil/water) WATER

Lab Sample ID: 3413.8

CAE 7/4/91

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66595

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec. 100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 4/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	.050	U
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	.10	U
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	.10	U
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U



1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

LAB SAMPLE NO.

Lab Name: PACE

Contract: EPC

V140FD

00046

Lab Code: PACE

Case No.:

SAS No.:

SDG No.: V140P1FD

Matrix: (soil/water) WATER

Lab Sample ID: 3414.6 <sup>case 7/4/91</sup>

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66600

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 4/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

319-84-6-----Alpha-BHC	.050	U
319-85-7-----Beta-BHC	.050	U
319-86-8-----Delta-BHC	.050	U
58-89-9-----Gamma-BHC	.050	U
76-44-8-----Heptachlor	.050	U
309-00-2-----Aldrin	.050	U
1024-57-3-----Heptachlor Epoxide	.050	U
959-98-8-----Endosulfan I	.050	U
60-57-1-----Dieldrin	.10	U
72-55-9-----4,4'-DDE	.10	U
72-20-8-----Endrin	.10	U
33213-65-9-----Endosulfan II	.10	U
72-54-8-----4,4'-DDD	.10	U
1031-07-8-----Endosulfan Sulfate	.10	U
50-29-3-----4,4'-DDT	.10	U
72-43-5-----Methoxychlor	.50	U
53494-70-5-----Endrin Ketone	.10	U
5103-71-9-----alpha-Chlordane	.50	U
5103-74-2-----gamma-Chlordane	.50	U
8001-35-2-----Toxaphene	1.0	U
12674-11-2-----Arochlor-1016	.50	U
11104-28-2-----Arochlor-1221	.50	U
11141-16-5-----Arochlor-1232	.50	U
53469-21-9-----Arochlor-1242	.50	U
12672-29-6-----Arochlor-1248	.50	U
11097-69-1-----Arochlor-1254	1.0	U
11096-82-5-----Arochlor-1260	1.0	U

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

VA SAMPLE NO.

V140F00019

Lab Name: PACE

Contract: EPC

Lab Code: PACE

Case No.:

SAS No.:

SDG No.: V140P5FS

Matrix: (soil/water) WATER

Lab Sample ID: 3517.7 *Case 7/4/91*

Sample wt/vol: 1000. (g/mL)ML

Lab File ID: V66607

Level: (low/med) LOW

Date Received: 5/15/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 4/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	.050	U
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	.10	U
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	.10	U
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

00025  
V131FS

Lab Name: PACE

Contract: EPC

Lab Code: PACE

Case No.:

SAS No.:

SDG No.: V131P5FS

Matrix: (soil/water) WATER

Lab Sample ID: 3518.5

CASE 7/9/91

Sample wt/vol: 1000. (g/mL)ML

Lab File ID: V66608

Level: (low/med) LOW

Date Received: 5/15/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 4/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	.050	U
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	.10	U
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	.10	U
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

V100031

Lab Name: PACE

Contract: EPC

Lab Code: PACE

Case No.:

SAS No.:

SDG No.: V131P5 FD

Matrix: (soil/water) WATER

Lab Sample ID: 3519.3

Case 7/9/91

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66612

Level: (low/med) LOW

Date Received: 5/15/91

Moisture: not dec. 100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 4/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	.050	U
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	.10	U
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	.10	U
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

V131FB

00037

Lab Name: PACE

Contract: EPC

Lab Code: PACE

Case No.:

SAS No.:

SDG No.: V131P5FB

Matrix: (soil/water) WATER

Lab Sample ID: 3520.7

COE  
7/4/91

Sample wt/vol: 1000. (g/mL)ML

Lab File ID: V66613

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 4/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UC/L	Q
---------	----------	--	---

319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	.050	U
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	.10	U
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	.10	U
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

Lab Name: PACE

Contract: EPC

CAE  
7/9/91

V140FS

V140P10FS

Lab Code: PACE

Case No.:

SAS No.:

SDG No.:

00020

Matrix: (soil/water) WATER

Lab Sample ID: 3697.1

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66618

Level: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/22/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 5/91

PC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	.050	U
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	.10	U
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	.10	U
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U

R  
CAE  
7/9/91

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

Lab Name: PACE

Contract: EPC

V131FS  
V131P10FS

Lab Code: PACE

Case No.:

SAS No.:

SDG No.:

00026

Matrix: (soil/water) WATER

Lab Sample ID: 3698.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66619

Level: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/22/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 5/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	.050	U
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	.10	U
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	<del>.10</del>	<del>U</del>
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

Lab Name: PACE

Contract: EPC

V131FD

V131 P10ED

CAE  
7/1/91

Lab Code: PACE

Case No.:

SAS No.:

SDG No.:

00032

Matrix: (soil/water) WATER

Lab Sample ID: 3699.8

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66623

Level: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/22/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 5/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	.050	U
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	.10	U
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	<del>.10</del>	<del>U</del>
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U

R  
CAE  
7/1/91



1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

VA SAMPLE NO.

Lab Name: PACE

Contract: EPC

CAE  
7/4/91

V131FB

V131P10FB

Lab Code: PACE

Case No.:

SAS No.:

SDG No.:

00038

Matrix: (soil/water) WATER

Lab Sample ID: 3700.5

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66624

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/22/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 5/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	.050	U
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	.10	U
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	.10	U
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U

R

CAE  
7/4/91



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
AND  
AREAL SAMPLING  
INORGANIC ANALYSES DATA

Samples Collected 5/10/91-5/28/91

Chemical Analyses Performed By  
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

All wet chemistry data is acceptable as modified.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

**Inorganic Data Validation**  
**for**  
**Environmental Project Control, Inc.**  
**Samples Collected 5/10/91-5/28/91**

**Case Narrative**

This group contained 43 water samples analyzed for total alkalinity, chloride, soluble fluoride, nitrite/nitrate, total phosphorus, dissolved silica, total dissolved solids, sulfate, hexavalent chromium, and total organic carbon.

Samples validated in this report are noted below:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
V131TDS1	34022	05/10/91
V131TDS1FB	34030	05/10/91
V131TDS1FD	34049	05/10/91
V131TOC1	34057	05/10/91
V131TOC1FB	34065	05/10/91
V131TOC1FD	34073	05/10/91
V140TDS1	34197	05/10/91
V140TDS1FD	34200	05/10/91
V140TOC	34219	05/10/91
V140TOC FD	34227	05/10/91
V140TDS5	35282	05/10/91
V131TDS5	35290	05/14/91
V131TDS5FD	35304	05/14/91
V131TDS5FB	35312	05/14/91
V140TOC5	35320	05/14/91
V131TOC5	35339	05/14/91
V131TOC5FD	35347	05/14/91
V131TOC5FB	35355	05/14/91
V140HC5	35398	05/14/91
V131HC5	35401	05/14/91
V1315FD	35410	05/14/91
V131HC5FB	35428	05/14/91
V140HC6	35894	05/15/91
V131HC6	35908	05/15/91
V131HC6FD	35916	05/15/91
V131HC6FB	35924	05/15/91
V140TOC10	37056	05/19/91
V131TOC10	37064	05/19/91
V131TOC10FD	37072	05/19/91
V131TOC10FB	37080	05/19/91
V140TDSFS	37099	05/19/91

V131TDS10	37102	05/19/91
V131TDS10FD	37110	05/19/91
V131TDS10FB	37129	05/19/91
V140HC10	37170	05/19/91
V131HC10	37188	05/19/91
V131HC10FD	37196	05/19/91
V131HC10FB	37200	05/19/91
UC145	41045	05/28/91
UC72	41053	05/28/91
UC141	41061	05/28/91
UC112	41070	05/28/91
UC18	41088	05/28/91

The areas reviewed during validation are listed below.

## **Wet Chemistry Data Validation**

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. Matrix Spike Sample Analysis
- V. Duplicate Sample Analysis
- VI. Sample Result Verification
- VII. Overall Assessment

## Data Validation

### I. Holding Times

All wet chemistry analyses were conducted within acceptable holding times.

### II. Calibration

The correlation coefficient for the calibration curve for sulfate was 0.9814. All positive sulfate results and detection limits were qualified as estimated.

### III. Blanks

Field blank results are summarized below.

<u>Sample (FB)</u>	<u>Parameter</u>	<u>Result (ppm)</u>
V131TDS1	Alkalinity	2
V131TOC1	Nitrate/Nitrite	0.52
	TOC	0.9
V131TDS5	Alkalinity	2
V131TOC5	Nitrate/Nitrite	0.1
	TOC	0.5
V131TOC10	Nitrate/Nitrite	0.2
	TOC	0.7
V131TDS10	Alkalinity	2.0

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value.

No field blank was provided for samples collected on 28 May. Results for these samples should be used with caution.

#### IV. Matrix Spike Sample Analysis

Matrix spike analyses were satisfactory except as noted below (Criteria 75%-125%).

<u>Spiked Sample</u>	<u>Parameter</u>	<u>Recovery (%)</u>
V131TOC1	Nitrate/Nitrite	250
V131TDS5	Chloride	0
V131TOC10	Nitrate/Nitrite	135
UG12	Nitrate/Nitrite	10

Positive nitrate/nitrite results for samples associated with V131TOC1, V131TOC10, and UG12 were estimated (J). Detection limits for samples associated with UG12 were rejected (R). Positive chloride results associated with V131TDS5 were estimated (J) and detection limits associated with V131TDS5 were rejected (R).

#### V. Duplicate Sample Analysis

Duplicate results were acceptable except as noted below (Criteria RPD  $\pm$  20%).

<u>Duplicate Sample</u>	<u>Parameter</u>	<u>RPD (%)</u>
V131TDS5	Chloride	38
V131TOC10	TOC	43

Positive chloride results for samples associated with V131TDS5 and positive TOC results for samples associated with V131TOC10 were estimated (J).

#### VI. Sample Result Verification

Form I's were correct.

#### VII. Overall Assessment

All data were acceptable with the changes noted above.



00053

W.R.GRACE

PACE Project Number: 810511503

PACE Sample Number:

95 0034022

Date Collected:

05/10/91

Date Received:

05/11/91

V131 TDS1

ParameterUnitsMDLFSINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Alkalinity, Total	mg/L	1	94
Chloride	mg/L	1	76.6
Fluoride, Total	mg/L	0.1	ND
Silica, dissolved	mg/L	0.2	16.9
Solids, Total Dissolved	mg/L	1	352
Sulfate	mg/L	5	35.4 J

*per*  
7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00054

W.R.GRACE

PACE Project Number: 810511503

PACE Sample Number:

95 0034030

Date Collected:

05/10/91

Date Received:

05/11/91

V131 TDS1

Parameter

Units

MDL

FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L

1

2

Chloride

mg/L

1

ND

Silica, dissolved

mg/L

0.2

ND

Solids, Total Dissolved

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00055

W.R.GRACE

PACE Project Number: 810511503

PACE Sample Number:

95 0034049

Date Collected:

05/10/91

Date Received:

05/11/91

V131 TDS1

ParameterUnitsMDLFDINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L

1

93

Chloride

mg/L

1

77.1

Fluoride, Total

mg/L

0.1

ND

Silica, dissolved

mg/L

0.2

17.5

Solids, Total Dissolved

mg/L

1

340

Sulfate

mg/L

5

31.7 J

per 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00056

W.R.GRACE

PACE Project Number: 810511503

PACE Sample Number:

Date Collected:

Date Received:

95 0034057

05/10/91

05/11/91

V131 TOC1

FS

ParameterUnitsMDLINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

3.6

J

pan

7/18/91

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

4.0

u

pan

7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00057

W.R.GRACE

PACE Project Number: 810511503

PACE Sample Number:

95 0034065

Date Collected:

05/10/91

Date Received:

05/11/91

V131 TOC1

ParameterUnitsMDLFBINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

0.52

J pen 7/18/91

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

.9

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00058

W.R.GRACE

PACE Project Number: 810511503

PACE Sample Number:

Date Collected:

Date Received:

95 0034073

05/10/91

05/11/91

V131 TOC1

FD

ParameterUnitsMDLINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

4.2

J

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

4.0

u per 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00059

W.R.GRACE

PACE Project Number: 810511503

PACE Sample Number:

95 0034197

Date Collected:

05/10/91

Date Received:

05/11/91

V140 TDS1

ParameterUnitsMDLFSINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L

1

91

Chloride

mg/L

1

78.0

Fluoride, Total

mg/L

0.1

ND

Silica, dissolved

mg/L

0.2

22.5

Solids, Total Dissolved

mg/L

1

356

Sulfate

mg/L

5

33.2

J per 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00060

W.R.GRACE

PACE Project Number: 810511503

PACE Sample Number:

95 0034200

Date Collected:

05/10/91

Date Received:

05/11/91

V140 TDS1

ParameterUnitsMDLFDINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Alkalinity, Total	mg/L	1	91
Chloride	mg/L	1	77.7
Fluoride, Total	mg/L	0.1	ND
Silica, dissolved	mg/L	0.2	23.2
Solids, Total Dissolved	mg/L	1	352
Sulfate	mg/L	5	32.3

J per  
7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



00061

W.R.GRACE

PACE Project Number: 810511503

PACE Sample Number:

95 0034219

Date Collected:

05/10/91

Date Received:

05/11/91

V140 TOC

ParameterUnitsMDLFSINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

4.1

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

2.0

upm 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W.R.GRACE

PACE Project Number: 810511503

00062

PACE Sample Number:

95 0034227

Date Collected:

05/10/91

Date Received:

05/11/91

V140 TOC

Parameter

Units

MDL

FD

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

3.6

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

1.4 u per 7/18/91

MDL Method Detection Limit

ND Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810515505

00063

PACE Sample Number:

95 0035282

Date Collected:

05/14/91

Date Received:

05/15/91

V140 TDS5

Parameter

Units

MDL

FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L

1

92

Chloride

mg/L

1

78.6 J

Fluoride, Total

mg/L

0.1

ND

Silica, dissolved

mg/L

0.2

18.2

Solids, Total Dissolved

mg/L

1

306

Sulfate

mg/L

5

34.7 J

psn 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810515505

00064

PACE Sample Number:

95 0035290

Date Collected:

05/14/91

Date Received:

05/15/91

V131 TDS5

Parameter

Units

MDL

FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L

1

94

Fluoride, Total

mg/L

0.1

ND

Silica, dissolved

mg/L

0.2

16.6

Solids, Total Dissolved

mg/L

1

300

Sulfate

mg/L

5

32.8

J per 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00065

W. R. GRACE

PACE Project Number: 810515505

PACE Sample Number:

95 0035304

Date Collected:

05/14/91

Date Received:

05/15/91

V131 TDS5

ParameterUnitsMDLFDINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L

1

94

Chloride

mg/L

1

78.0 J

Fluoride, Total

mg/L

0.1

ND

Silica, dissolved

mg/L

0.2

16.4

Solids, Total Dissolved

mg/L

1

318

Sulfate

mg/L

5

30.3 J

pan 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810515505

00066

PACE Sample Number:

95 0035312

Date Collected:

05/14/91

Date Received:

05/15/91

V131 TDS5

Parameter

Units

MDL

FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L

1

2

Chloride

mg/L

~~1~~

ND

R

Fluoride, Total

mg/L

0.1

ND

Silica, dissolved

mg/L

0.2

ND

Solids, Total Dissolved

mg/L

1

ND

Sulfate

mg/L

5

ND

J per 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810515505

00067

PACE Sample Number:

95 0035320

Date Collected:

05/14/91

Date Received:

05/15/91

V140 TOC5

Parameter

Units

MDL

FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

3.5

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

1.5

u per 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810515505

00068

PACE Sample Number:

95 0035339

Date Collected:

05/14/91

Date Received:

05/15/91

V131 TOC5

Parameter

Units

MDL

FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

3.1

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

1.9

u per 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



W. R. GRACE

PACE Project Number: 810515505

00069

PACE Sample Number:

95 0035347

Date Collected:

05/14/91

Date Received:

05/15/91

V131 TOC5

Parameter

Units

MDL

FD

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

3.4

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

2.3

4 per 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810515505

00070

PACE Sample Number:

95 0035355

Date Collected:

05/14/91

Date Received:

05/15/91

V131 TOC5

Parameter

Units

MDL

FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

0.10

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

.5

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810515505

00071

PACE Sample Number:

95 0035398

Date Collected:

05/14/91

Date Received:

05/15/91

V140 HC5

Parameter

Units

MDL

FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

.02

MDL

Method Detection Limit

W. R. GRACE

PACE Project Number: 810515505

00072

PACE Sample Number:

95 0035401

Date Collected:

05/14/91

Date Received:

05/15/91

V131 HC5

Parameter

Units

MDL

FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810515505

00073

PACE Sample Number:

95 0035410

Date Collected:

05/14/91

Date Received:

05/15/91

V131 HC5

Parameter

Units

MDL

FD

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810515505

00074

PACE Sample Number:

95 0035428

Date Collected:

05/14/91

Date Received:

05/15/91

V131 HC5

Parameter

Units

MDL

FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810516512

00075

PACE Sample Number:

95 0035894

Date Collected:

05/15/91

Date Received:

05/16/91

V140 HC6

Parameter

Units

MDL

FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01 ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810516512

00076

PACE Sample Number:

95 0035908

Date Collected:

05/15/91

Date Received:

05/16/91

V131 HC6

Parameter

Units

MDL

FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



W. R. GRACE

PACE Project Number: 810516512

00077

PACE Sample Number:

95 0035916

Date Collected:

05/15/91

Date Received:

05/16/91

V131 HC6

Parameter

Units

MDL

FD

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810516512

00078

PACE Sample Number:

95 0035924

Date Collected:

05/15/91

Date Received:

05/16/91

V131 HC6

Parameter

Units

MDL

FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810519500

00079

PACE Sample Number:

95 0037056

Date Collected:

05/19/91

Date Received:

05/19/91

V140 TOC10

Parameter

Units

MDL

FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.20

4.0 J

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

2.1 u gm 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810519500 00080

PACE Sample Number:

95 0037064

Date Collected:

05/19/91

Date Received:

05/19/91

V131 TOC10

Parameter

Units

MDL

FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.20

3.8 J

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

3.4 u

pan 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810519500

00081

PACE Sample Number:

95 0037072

Date Collected:

05/19/91

Date Received:

05/19/91

V131 TOC10

Parameter

Units

MDL

FD

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.20

3.8 J

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

2.2 U

pen 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810519500

00082

PACE Sample Number:

95 0037080

Date Collected:

05/19/91

Date Received:

05/19/91

V131 TOC10

Parameter

Units

MDL

FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

0.2 J

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

.7 J

pan 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810519500

00083

PACE Sample Number:

95 0037099

Date Collected:

05/19/91

Date Received:

05/19/91

V140 TDS10

Parameter

Units

MDL

FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L

1

87

Chloride

mg/L

10

69.4

Fluoride, Total

mg/L

0.1

ND

Silica, dissolved

mg/L

0.2

14.4

Solids, Total Dissolved

mg/L

1

330

Sulfate

mg/L

5

35.4

J per 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810519500

00084

PACE Sample Number:

95 0037102

Date Collected:

05/19/91

Date Received:

05/19/91

V131 TDS10

Parameter

Units

MDL

FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L

1

87

Chloride

mg/L

10

67.3

Fluoride, Total

mg/L

0.1

ND

Silica, dissolved

mg/L

0.2

15.3

Solids, Total Dissolved

mg/L

1

312

Sulfate

mg/L

5

38.5

J psn 7/19/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



W. R. GRACE

PACE Project Number: 810519500

00085

PACE Sample Number:

95 0037110

Date Collected:

05/19/91

Date Received:

05/19/91

V131 TDS10

Parameter

Units

MDL

FD

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L

1

87

Chloride

mg/L

10

69.6

Fluoride, Total

mg/L

0.1

ND

Silica, dissolved

mg/L

0.2

15.3

Solids, Total Dissolved

mg/L

1

314

Sulfate

mg/L

5

36.7 J

per 7/18/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810519500

00086

PACE Sample Number:  
Date Collected:  
Date Received:

95 0037129  
05/19/91  
05/19/91  
V131 TDS10  
FB

Parameter

Units

MDL

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Alkalinity, Total  
Chloride  
Fluoride, Total  
Silica, dissolved  
Solids, Total Dissolved  
Sulfate

mg/L	1	2
mg/L	1	ND
mg/L	0.1	ND
mg/L	0.2	ND
mg/L	1	ND
mg/L	5	ND

*psn* 7/18/91

MDL  
ND

Method Detection Limit  
Not detected at or above the MDL.

W.R.Grace

PACE Project Number: 810531510

00087

PACE Sample Number:

95 0041045

Date Collected:

05/28/91

Date Received:

05/31/91

Parameter

Units

MDL

UC145

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

1

64.7

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

0.03

Total Organic Carbon

mg/L

0.10

.55

J

*7/18/91*

MDL

Method Detection Limit

W.R.Grace

PACE Project Number: 810531510

00088

PACE Sample Number:

95 0041053

Date Collected:

05/28/91

Date Received:

05/31/91

Parameter

Units

MDL

UC72

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

10

186

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

3.5

Total Organic Carbon

mg/L

0.10

1.6

*7/18/91*

MDL

Method Detection Limit

W.R.Grace

PACE Project Number: 810531510

00089

PACE Sample Number:

95 0041061

Date Collected:

05/28/91

Date Received:

05/31/91

Parameter

Units

MDL

UC141

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

10

112

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

0.03

Total Organic Carbon

mg/L

0.10

1.5

*pen* 7/18/91

MDL

Method Detection Limit

W.R.Grace

PACE Project Number: 810531510

00090

PACE Sample Number:

95 0041070

Date Collected:

05/28/91

Date Received:

05/31/91

Parameter

Units

MDL

UC112

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

10

196

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

0.04 J

Total Organic Carbon

mg/L

0.10

18.6

*7/18/91*

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W.R.Grace

PACE Project Number: 810531510

00091

PACE Sample Number:

95 0041088

Date Collected:

05/28/91

Date Received:

05/31/91

Parameter

Units

MDL

UC18

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

10

650

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

3.2

Total Organic Carbon

mg/L

0.10

4.2

*pm*  
*7/18/91*

MDL

Method Detection Limit

W. R. GRACE

PACE Project Number: 810519500

00121

PACE Sample Number:

95 0037170

Date Collected:

05/19/91

Date Received:

05/19/91

V140HC 10

Parameter

Units

MDL

FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

PACE Sample Number:

95 0037188

Date Collected:

05/19/91

Date Received:

05/19/91

V131HC 10

Parameter

Units

MDL

FS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

PACE Sample Number:

95 0037196

Date Collected:

05/19/91

Date Received:

05/19/91

V131HC 10

Parameter

Units

MDL

FD

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

PACE Sample Number:

95 0037200

Date Collected:

05/19/91

Date Received:

05/19/91

V131HC 10

Parameter

Units

MDL

FB

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/11/91

Chemical Analyses Performed By  
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Tetrachloroethene was the only compound detected above the detection limits in the Unifirst samples and vinyl chloride, total 1,2-dichloroethene, and trichloroethene were the only compounds detected in Grace samples. No tentatively identified compounds (TICs) were detected.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Ten treatment system samples were collected (both UniFirst and Grace) and submitted for analysis to PACE, Inc. on May 11, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses. Although the narrative stated that S1-14 was used for the matrix spike/matrix spike duplicate, V197V2FS and V154V2FS were also used as QC samples. All three sets were validated. All Grace samples were collected in duplicate and analyzed.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
V131V2FD	3430	05/11/91
V131V2FS	3429	05/11/91
V154V2FD	3437	05/11/91
V154V2FS	3438	05/11/91
V197V2FS	3435	05/11/91
V197V2FD	3436	05/11/91
S1-14	3371	05/11/91
S1-14DUP	3372	05/11/91
S1-14TB	3374	05/11/91
S4-12	3366	05/11/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

### **I. Holding Times**

All sample analyses met holding times.

### **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

### **III. Calibration**

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data were affected.

#### **A. Initial**

Initial calibration criteria were met with the exception of 2-butanone (Instr. G) which had an average RRF of 0.031 and %RSD of 31.6 and carbon tetrachloride (Instr. J) which had an average RRF of 0.088. Detection limits for 2-butanone (Instr. G) and carbon tetrachloride (Instr. J) were rejected.

#### **B. Continuing**

Continuing calibration criteria not met are summarized below.

Date	Time	Compound	RF	%D
5/14 (Instr. G)	13:23	2-Butanone	0.028 (0.10)	
5/16 (Instr. G)	11:53	2-Butanone	0.028 (0.10)	
5/16 (Instr. J)	13:51	Chloromethane		34.7 (25)
		2-Hexanone		39.9 (25)

#### **( ) Acceptance criteria**

Detection limits for 2-butanone were rejected. All other data were not affected.

#### IV. Blanks

Methylene chloride was detected in the VBLK 02 at 1 ppb. All other blanks were acceptable. Methylene chloride results were qualified as less than the reported values (U).

#### V. Surrogate Recovery

All surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria for S1-14 and V197V2FS. Compounds not meeting criteria for V154V2FS are summarized below.

<u>Compound</u>	<u>Recovery</u>	<u>Criteria</u>
Trichloroethene	55 (MS)	71-120
	RPD 31	14
1,1-Dichloroethene	RPD 21	14
Toluene	RPD 15	13

As per criteria, only the unspiked sample data were qualified (V154V2FS and V154V2FD); however, the end user of the data should be cautious of the trichloroethene results for V131V2FS and V131V2FD since these samples were analyzed with this MS/MSD.

#### VII. Field Duplicates

Duplicate results are summarized below.

<u>Sample</u>	<u>Compound</u>	<u>Samp. Conc.</u>	<u>Dup. Conc.</u>	<u>MS/MSD*</u>
S1-14	Tetrachloroethene	2900	3100	2900/3100
V131V2FS	Vinyl Chloride	1100	1100	
	Acetone	100	ND	
	Trichloroethene	310	310	
	Tetrachloroethene	16J	ND	
	1,2-DCE	1200	1200	
V154V2FS	t-1,2-Dichloroethene	420	420	370/380
	Trichloroethene	450	440	590/640

<u>Sample</u>	<u>Compound</u>	<u>Samp. Conc.</u>	<u>Dup. Conc.</u>	<u>MS/MSD*</u>
V197V2FS	Vinyl Chloride	2000	1200	2000/2000
	Acetone	30 J	ND	24 J/ND
	t-1,2-Dichloroethene	1900	1400	2000/1900
	Trichloroethene	220	370	
	Tetrachloroethene	ND	11 J	ND/ND
	Toluene	45 J	13 J	
	Ethylbenzene	27 J	ND	26 J/23 J

Results are acceptable with the modifications as noted below:

V131V2FS Acetone Rejected.  
Tetrachloroethene Rejected.

V197V2FS Vinyl chloride 1200 J.  
Acetone Rejected.  
Trichloroethene 220 J 370 J  
Tetrachloroethene Rejected.  
Ethylbenzene 27J 50UJ 26J 23J

#### **VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

#### **IX. TCL Compound Identification**

Target compounds were properly identified.

#### **X. Compound Quantitation and Reported Detection Limits**

Detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were detected.

#### **XII. System Performance**

System performance was acceptable.

### XIII. Overall Assessment of Data for a Case

Detection limits for 2-butanone (Instr. G) and carbon tetrachloride (Instr. J) were rejected.

Trichloroethene data for V154V2FS and V154V2FD were estimated. As per criteria, only the unspiked sample data were qualified (V154V2FS and V154V2FD); however, the end user of the data should be cautious of the trichloroethene results for V131V2FS and V131V2FD since these samples were analyzed with this MS/MSD.

Field duplicate results are acceptable with the modifications as noted below:

V131V2FS Acetone Rejected  
Tetrachloroethene Rejected

V197V2FS Vinyl chloride 1200 J.  
Acetone Rejected.  
Trichloroethene 220 J 370 J  
Tetrachloroethene Rejected.  
Ethylbenzene 27J 50UJ 26J 23J

All other data were acceptable.



1A  
VOLAT : ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-14

00020

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3371

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2915

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	200.	U
74-83-9	Bromomethane	200.	U
75-01-4	Vinyl Chloride	200.	U
75-00-3	Chloroethane	200.	U
75-09-2	Methylene Chloride	100.	U
67-64-1	Acetone	200.	U
75-15-0	Carbon Disulfide	100.	U
75-35-4	1,1-Dichloroethene	100.	U
75-34-3	1,1-Dichloroethane	100.	U
540-59-0	1,2-Dichloroethene (total)	100.	U
67-66-3	Chloroform	100.	U
107-06-2	1,2-Dichloroethane	100.	U
78-93-3	2-Butanone	200.	U R
71-55-6	1,1,1-Trichloroethane	100.	U
56-23-5	Carbon Tetrachloride	100.	U
108-05-4	Vinyl Acetate	200.	U
75-27-4	Bromodichloromethane	100.	U
78-87-5	1,2-Dichloropropane	100.	U
10061-01-5	cis-1,3-Dichloropropene	100.	U
79-01-6	Trichloroethene	100.	U
124-48-1	Dibromochloromethane	100.	U
79-00-5	1,1,2-Trichloroethane	100.	U
71-43-2	Benzene	100.	U
10061-02-6	Trans-1,3-Dichloropropene	100.	U
75-25-2	Bromoform	100.	U
108-10-1	4-Methyl-2-Pentanone	200.	U
591-78-6	2-Hexanone	200.	U
127-18-4	Tetrachloroethene	2900.	U
79-34-5	1,1,2,2-Tetrachloroethane	100.	U
108-88-3	Toluene	100.	U
108-90-7	Chlorobenzene	100.	U
100-41-4	Ethylbenzene	100.	U
100-42-5	Styrene	100.	U
1330-20-7	Xylene (total)	100.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TEN ACTIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SI-14

00021

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3371

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62915

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1A  
VOL/ LE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-14DUP

00026

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3372

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62912

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	200.	U
74-83-9	-----Bromomethane	200.	U
75-01-4	-----Vinyl Chloride	200.	U
75-00-3	-----Chloroethane	200.	U
75-09-2	-----Methylene Chloride	100.	U
67-64-1	-----Acetone	200.	U
75-15-0	-----Carbon Disulfide	100.	U
75-35-4	-----1,1-Dichloroethene	100.	U
75-34-3	-----1,1-Dichloroethane	100.	U
540-59-0	-----1,2-Dichloroethene (total)	100.	U
67-66-3	-----Chloroform	100.	U
107-06-2	-----1,2-Dichloroethane	100.	U
78-93-3	-----2-Butanone	200.	UR
71-55-6	-----1,1,1-Trichloroethane	100.	U
56-23-5	-----Carbon Tetrachloride	100.	U
108-05-4	-----Vinyl Acetate	200.	U
75-27-4	-----Bromodichloromethane	100.	U
78-87-5	-----1,2-Dichloropropane	100.	U
10061-01-5	-----cis-1,3-Dichloropropene	100.	U
79-01-6	-----Trichloroethene	100.	U
124-48-1	-----Dibromochloromethane	100.	U
79-00-5	-----1,1,2-Trichloroethane	100.	U
71-43-2	-----Benzene	100.	U
10061-02-6	-----Trans-1,3-Dichloropropene	100.	U
75-25-2	-----Bromoform	100.	U
108-10-1	-----4-Methyl-2-Pentanone	200.	U
591-78-6	-----2-Hexanone	200.	U
127-18-4	-----Tetrachloroethene	3100.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	100.	U
108-88-3	-----Toluene	100.	U
108-90-7	-----Chlorobenzene	100.	U
100-41-4	-----Ethylbenzene	100.	U
100-42-5	-----Styrene	100.	U
1330-20-7	-----Xylene(total)	100.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-14DUP

00027

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3372

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62912

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOL. LE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-14TB

00032

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3374

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62908

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U R
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene(total)	5.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
RELATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-14TB

00033

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3374

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62908

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EP: SAMPLE NO.

S4-10037

Name: PACE Contract:   
 Code: PACE Case No.: EPC SAS No.: SDG No.:   
 Matrix: (soil/water) WATER Lab Sample ID: 3366   
 Sample wt/vol: 5. (g/mL) ML Lab File ID: G2925   
 Rel: (low/med) LOW Date Received: 5/11/91   
 Moisture: not dec.100. Date Analyzed: 5/16/91   
 Column: (pack/cap) PACK Dilution Factor: 10.00

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	Q
74-87-3	Chloromethane	100. U
74-83-9	Bromomethane	100. U
75-01-4	Vinyl Chloride	100. U
75-00-3	Chloroethane	100. U
75-09-2	Methylene Chloride	50. U
67-64-1	Acetone	100. U
75-15-0	Carbon Disulfide	50. U
75-35-4	1,1-Dichloroethene	50. U
75-34-3	1,1-Dichloroethane	50. U
540-59-0	1,2-Dichloroethene (total)	50. U
67-66-3	Chloroform	50. U
107-06-2	1,2-Dichloroethane	50. U
78-93-3	2-Butanone	100. R
71-55-6	1,1,1-Trichloroethane	50. U
56-23-5	Carbon Tetrachloride	50. U
108-05-4	Vinyl Acetate	100. U
75-27-4	Bromodichloromethane	50. U
78-87-5	1,2-Dichloropropane	50. U
10061-01-5	cis-1,3-Dichloropropene	50. U
79-01-6	Trichloroethene	50. U
124-48-1	Dibromochloromethane	50. U
79-00-5	1,1,2-Trichloroethane	50. U
71-43-2	Benzene	50. U
10061-02-6	Trans-1,3-Dichloropropene	50. U
75-25-2	Bromoform	50. U
108-10-1	4-Methyl-2-Pentanone	100. U
591-78-6	2-Hexanone	100. U
127-18-4	Tetrachloroethene	1400. U
79-34-5	1,1,2,2-Tetrachloroethane	50. U
108-88-3	Toluene	50. U
108-90-7	Chlorobenzene	50. U
100-41-4	Ethylbenzene	50. U
100-42-5	Styrene	50. U
1330-20-7	Xylene (total)	50. U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S4-12  
00038

Lab Name: PACE

Contract:

Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3366

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2925

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOL/ILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

VISIVAFD  
VISIFD

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00114

AS/  
6/24/91

Matrix: (soil/water) WATER

Lab Sample ID: 3430

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2926

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	1100.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1200.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	UR
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	310.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene(total)	50.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TE<sup>+</sup> ACTIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

131R FD  
7131ED

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDS No. 00115

MJ  
6/20/91

Matrix: (soil/water) WATER

Lab Sample ID: 3430

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62926

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

V13112 FS  
V131FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

00122

SDG No.:

MI

6/24/91

Matrix: (soil/water) WATER

Lab Sample ID: 3429

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62922

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	1100.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	64.	U
67-64-1	-----Acetone	100.	R
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1200.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	R
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	310.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	16.	R
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene(total)	50.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

1312 FS  
4121ES

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

005123:

12/

6/24/91

Matrix: (soil/water) WATER

Lab Sample ID: 3429

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62922

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.: 00140

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3437

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62928

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	50.	U
74-83-9	-----Bromomethane	50.	U
75-01-4	-----Vinyl Chloride	50.	U
75-00-3	-----Chloroethane	50.	U
75-09-2	-----Methylene Chloride	25.	U
67-64-1	-----Acetone	50.	U
75-15-0	-----Carbon Disulfide	25.	U
75-35-4	-----1,1-Dichloroethene	25.	U
75-34-3	-----1,1-Dichloroethane	25.	U
540-59-0	-----1,2-Dichloroethene (total)	420.	
67-66-3	-----Chloroform	25.	U
107-06-2	-----1,2-Dichloroethane	25.	U
78-93-3	-----2-Butanone	50.	U R
71-55-6	-----1,1,1-Trichloroethane	25.	U
56-23-5	-----Carbon Tetrachloride	25.	U
108-05-4	-----Vinyl Acetate	50.	U
75-27-4	-----Bromodichloromethane	25.	U
78-87-5	-----1,2-Dichloropropane	25.	U
10061-01-5	-----cis-1,3-Dichloropropene	25.	U
79-01-6	-----Trichloroethene	450.	U S
124-48-1	-----Dibromochloromethane	25.	U
79-00-5	-----1,1,2-Trichloroethane	25.	U
71-43-2	-----Benzene	25.	U
10061-02-6	-----Trans-1,3-Dichloropropene	25.	U
75-25-2	-----Bromoform	25.	U
108-10-1	-----4-Methyl-2-Pentanone	50.	U
591-78-6	-----2-Hexanone	50.	U
127-18-4	-----Tetrachloroethene	25.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	25.	U
108-88-3	-----Toluene	25.	U
108-90-7	-----Chlorobenzene	25.	U
100-41-4	-----Ethylbenzene	25.	U
100-42-5	-----Styrene	25.	U
1330-20-7	-----Xylene (total)	25.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TE ACTIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

15412B  
~~V15412B~~

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

00141 No.:

*DM/*  
*6/24/91*

Matrix: (soil/water) WATER

Lab Sample ID: 3437

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62928

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V1542FD  
V154FD

Lab Name: PACE

Contract: 00133

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3438

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2930

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NO.

COMPOUND

0

74-87-3	-----Chloromethane	50.	U
74-83-9	-----Bromomethane	50.	U
75-01-4	-----Vinyl Chloride	50.	U
75-00-3	-----Chloroethane	50.	U
75-09-2	-----Methylene Chloride	25.	U
67-64-1	-----Acetone	50.	U
75-15-0	-----Carbon Disulfide	25.	U
75-35-4	-----1,1-Dichloroethene	25.	U
75-34-3	-----1,1-Dichloroethane	25.	U
540-59-0	-----1,2-Dichloroethene (total)	420.	
67-66-3	-----Chloroform	25.	U
107-06-2	-----1,2-Dichloroethane	25.	U
78-93-3	-----2-Butanone	50.	U R
71-55-6	-----1,1,1-Trichloroethane	25.	U
56-23-5	-----Carbon Tetrachloride	25.	U
108-05-4	-----Vinyl Acetate	50.	U
75-27-4	-----Bromodichloromethane	25.	U
78-87-5	-----1,2-Dichloropropane	25.	U
10061-01-5	-----cis-1,3-Dichloropropene	25.	U
79-01-6	-----Trichloroethene	440.	U J
124-48-1	-----Dibromochloromethane	25.	U
79-00-5	-----1,1,2-Trichloroethane	25.	U
71-43-2	-----Benzene	25.	U
10061-02-6	-----Trans-1,3-Dichloropropene	25.	U
75-25-2	-----Bromoform	25.	U
108-10-1	-----4-Methyl-2-Pentanone	50.	U
591-78-6	-----2-Hexanone	50.	U
127-18-4	-----Tetrachloroethene	25.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	25.	U
108-88-3	-----Toluene	25.	U
108-90-7	-----Chlorobenzene	25.	U
100-41-4	-----Ethylbenzene	25.	U
100-42-5	-----Styrene	25.	U
1330-20-7	-----Xylene(total)	25.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TE ACTIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V154FD  
V154FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

001994 No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3438

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2930

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOL% LE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

V197V2FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

00157

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3435.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2646

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	2000.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	30.	UR
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1900.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	UR
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	220.	J
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	45.	J
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	27.	J
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V197V2FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00158

Matrix: (soil/water) WATER

Lab Sample ID: 3435.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2646

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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1A  
VOL. .LE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V197V2FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00147

Matrix: (soil/water) WATER

Lab Sample ID: 3436.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2649

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	1200.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50 <del>5</del>	U <i>OR 6/24/91</i>
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1400.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U <i>R</i>
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	370.	U <i>J</i>
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50 <del>290</del>	U <i>OR 6/24/91</i>
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	11.	U <i>R</i>
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	13.	U <i>J</i>
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U <i>J</i>
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V197V2FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00148

Matrix: (soil/water) WATER

Lab Sample ID: 3436.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2649

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEMS  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/11/91

Chemical Analyses Performed By  
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

All positive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds in the standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

Cooler temperature upon receipt of W.R. Grace samples by the laboratory was 10°C. No temperature was recorded for the UniFirst samples. Temperatures outside the 4°C  $\pm$  2°C range may adversely affect the volatile compounds.

No positive results were reported in any of the samples in this sample delivery group.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Eight samples were collected and submitted to PACE, Inc. on May 11, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S5-9	3367	05/11/91
S6-14	3368	05/11/91
S6-14TB	3370	05/11/91
S1-14FB	3373	05/11/91
V131V2TB	3431	05/11/91
V140V2FS	3432	05/11/91
V140V2FD	3433	05/11/91
V140V2FB	3434	05/11/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



## **I. Holding Times**

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Peaks were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

### **A. Initial**

Initial calibration criteria were met on 5/16/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/21/91 with the exception of the RF for 1,1-dichloroethane (actual 0.01137; criteria 0.1) and the % difference for 1,1-dichloroethane (actual 99.6; criteria 25). Detection limits for 1,1-dichloroethane were rejected in Sample V131V2TB.

Continuing calibration criteria were met on 5/22/91 with the exception of the % difference for trans-1,2-dichloroethene (actual 28.21; criteria 25). Data were not affected.

## **IV. Blanks**

The trip blanks, field blanks, and method blanks were clean.

## **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample V140V2FS. The percent recovery for 1,1-dichloroethene was slightly below QC criteria in the MS. The relative percent differences for trichloroethene and benzene were above QC criteria. No positive results for those compounds were detected, so no data were qualified.

#### VII. Field Duplicates

Samples V140V2FS and V140V2FD were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

No positive results were reported for any of the samples in this sample delivery group.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45

<u>Compound</u>	<u>MDL (ug/L)</u>
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Results and detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were reported for this sample delivery group.

#### **XII. System Performance**

System performance was acceptable.

#### **XIII. Overall Assessment of Data for a Case**

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

UNIFIRST/ENSR

PACE Project Number: 810511501

PACE Sample Number:

95 0033670

Date Collected:

05/11/91

Date Received:

05/11/91

ParameterUnitsMDLS5-9ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

gib 7/12/91

MDL Method Detection Limit

ND Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810511501

PACE Sample Number:

95 0033689

Date Collected:

05/11/91

Date Received:

05/11/91

ParameterUnitsMDLS6-14ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	<i>2.23</i> <i>7/2/91</i>
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810511501

PACE Sample Number:

95 0033700

Date Collected:

05/11/91

Date Received:

05/11/91

ParameterUnitsMDLS6-14 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

2x8 7/14/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810511501

PACE Sample Number: 95 0033735  
 Date Collected: 05/11/91  
 Date Received: 05/11/91  
 Parameter Units MDL SI-14 FB

ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	WJ 2x8 7/9/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL Method Detection Limit  
 ND Not detected at or above the MDL.

W.R.GRACE

PACE Project Number: 8105113040 4 1

PACE Sample Number:

95 0034316

Date Collected:

05/11/91

Date Received:

05/11/91

ParameterUnitsMDLV131 V2 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	<del>0.5</del>	<del>ND</del>
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

ND <sup>43</sup> 8/2 7/19/91ND <sup>R</sup>

MDL Method Detection Limit  
ND Not detected at or above the MDL.



00045

W.R.GRACE

PACE Project Number: 810511504

PACE Sample Number:

95 0034324

Date Collected:

05/11/91

Date Received:

05/11/91

ParameterUnitsMDLV140 V2 FSORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

ELG  
7/9/91

MDL Method Detection Limit

ND Not detected at or above the MDL.

00049

W.R.GRACE

PACE Project Number: 810511504

PACE Sample Number:

95 0034332

Date Collected:

05/11/91

Date Received:

05/11/91

ParameterUnitsMDLV140 V2 FDORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND w
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

ex 7/9/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00053

W.R.GRACE

PACE Project Number: 810511504

PACE Sample Number:

95 0034340

Date Collected:

05/11/91

Date Received:

05/11/91

ParameterUnitsMDLV140 V2 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

2KJ  
7/19/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/12/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991  
Rev. 9/6/91

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Treatment system samples from both the UniFirst and W.R. Grace treatment systems were included in this sample delivery group. Data quality for this sample delivery group was good. The chain of custody forms for the W.R. Grace site did not show that the samples were relinquished by the sampler.

Excessive quality control samples were submitted with this sample delivery group. Because of this, the following samples were not analyzed by the laboratory: S1-15MS, S1-15MSD, V131V3FS, V131V3FSMS, V131V3FSMSD, V197V3MS, V197V3MSD, V154V3MS, and V154V3MSD.

Cooler temperatures upon receipt of samples by the laboratory were 8°C for the W.R. Grace samples and 7°C for the UniFirst samples. Temperatures outside the 4°C  $\pm$  2°C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Twelve samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 12, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
V131V3FD	3443	05/12/91
V131V3TB	3444	05/12/91
V154V3FS	3451	05/12/91
V154V3FD	3450	05/12/91
V197V3FD	3449	05/12/91
V197V3FS	3448	05/12/91
S1-15	3454	05/12/91
S1-15DUP	3455	05/12/91
S1-15TB	3465	05/12/91
S4-13	3460	05/12/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples except S4-13 were analyzed within the 7-day holding for nonpreserved samples. Sample S4-13 was analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimated in Sample S4-13.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### **A. Initial**

Initial calibration criteria were met on 4/24/91 (Instrument J) with the exception of the RRF for carbon tetrachloride (actual 0.088; criteria 0.1. Detection limits for carbon tetrachloride were rejected in Samples V197V3FS, V197V3FSMS, V197V3FSMSD, V197V3FD, and V154V3FS.

Initial calibration criteria were met on 5/14/91 (Instrument G) with the exception of the RRF for 2-butanone (actual 0.031; criteria 0.1) and the %RSD for 2-butanone (actual 31.6; criteria 30). Detection limits for 2-butanone were rejected in Samples V131V3FD, V131V3TB, and V154V3FD.

Initial calibration criteria were met on 5/17/91 (Instrument G) with the exception of the RRF for 2-butanone (actual 0.030; criteria 0.01) and the %RSD for 2-butanone (actual 39.9; criteria 30). The values listed on the Form VI for the RRF and %RSD of 2-butanone are incorrect. Correct values are provided above. The data validator has corrected the Form VI, and a corrected form is provided with this validation report. Detection limits for 2-butanone were rejected in Samples S1-15, S1-15DUP, S1-15TB, and S4-13.



#### **B. Continuing**

Continuing calibration criteria were met on 5/16/91 with the exception of the RF for carbon tetrachloride (actual 0.085; criteria 0.1) and the % difference for chloromethane (actual 34.7; criteria 25), trans-1,3-dichloropropene (actual 30.9; criteria 25), and 2-hexanone (actual 39.9; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/16/91 with the exception of the RF for 2-butanone (actual 0.031; criteria 0.1) and the % difference for methylene chloride (actual 37.1; criteria 25) and acetone (actual 44.1; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/19/91 with the exception of the RF for 2-butanone (actual 0.019; criteria 0.1) and the % difference for acetone (actual 53.2; criteria 25) and 2-butanone (actual 43.0; criteria 25). Detection limits for acetone were qualified as estimated in Samples S1-15, S1-15DUP, and S1-15TB.

Continuing calibration criteria were met on 5/20/91 with the exception of the RF for 2-butanone (actual 0.024; criteria 0.1) and the % difference for 2-butanone (actual 28.3; criteria 25) and bromoform (actual 29.1; criteria 25). Data were not affected.

#### **IV. Blanks**

Methylene chloride was reported in Trip Blank S1-15TB. Acetone was reported in Method Blanks VBLK01 and VBLK02. The result for methylene chloride in Sample S1-15TB was qualified as less than the reported value. The result for acetone in Sample V197V3FSMS was qualified as less than the reported value.

#### **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample V197V3FS. The %RPD for benzene was slightly above QC criteria (actual 13; criteria 11). Since benzene was not detected in field samples, data were not affected. Other data were within acceptance criteria.

Concentrations of the spiking compounds were not reported on the Form Is for the MS or the MSD.

#### VII. Field Duplicates

Three sets of duplicate samples were analyzed. Compounds and concentrations (in ug/L) reported were as follows:

<u>Compound</u>	<u>V154V3FS</u>	<u>V154V3FD</u>
Acetone	74	
Trichloroethene	410	370
Tetrachloroethene	11	

Results for acetone and tetrachloroethene in the field sample were rejected. Agreement between trichloroethene results in the two samples was within QC criteria.

<u>Compound</u>	<u>V197V3FS</u>	<u>V197V3FD</u>
Vinyl Chloride	1900	1600
Acetone		190
1,2-Dichloroethenes	1400	1400
Trichloroethene	63	62
Toluene	29	28
Ethylbenzene	34	33

The result for acetone in the field duplicate was rejected. Agreement between other results in these two samples were within acceptance criteria.

<u>Compound</u>	<u>S1-15</u>	<u>S1-15DUP</u>
Tetrachloroethene	2600	2400

Agreement between tetrachloroethene results in the two samples was within acceptance criteria.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

**X. Compound Quantitation and Reported Detection Limits**

Results and detection limits were acceptable with regard to the supporting data.

**XI. Tentatively Identified Compounds**

No TICs were reported for this SDG.

**XII. System Performance**

System performance requires attention. Manual integrations should be addressed. One sample exceeded the required holding time. Response factor criteria should be monitored.

**XIII. Overall Assessment of Data for a Case**

Data quality for this sample delivery group was good.

The aromatic compounds in S4-13 were qualified as estimated.

Detection limits for 2-Butanone and carbon tetrachloride were rejected in some samples.

Acetone and tetrachloroethene were rejected in V154V3FS.

Acetone was rejected in V197V3FS.

Methylene chloride and acetone results were qualified as less than the reported values in S1-15TB and V197V3FMS, respectively.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131V3FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3443.0

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: G2933

Level: (low/med) LOW

Date Received: 5/12/91

% Moisture: not dec. 100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	930.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1200.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U R
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	330.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V131V3FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3443.0

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: 62933

Level: (low/med) LOW

Date Received: 5/12/91

% Moisture: not dec. 100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

(ug/L or ug/kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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28.				
29.				
30.				

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131V3TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3444.8

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: 62934

Level: (low/med) LOW

Date Received: 5/12/91

% Moisture: not dec. 100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V131V3TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3444.8

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: 62934

Level: (low/med) LOW

Date Received: 5/12/91

Moisture: not dec. 100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
 VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V154V3PD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDS No.: 0006

Matrix: (soil/water) WATER

Lab Sample ID: 3451.0

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: G2935

Level: (low/med) LOW

Date Received: 5/12/91

% Moisture: not det. 100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	50.	IU
74-83-9	-----Bromomethane	50.	IU
75-01-4	-----Vinyl Chloride	50.	IU
75-00-3	-----Chloroethane	50.	IU
75-09-2	-----Methylene Chloride	25.	IU
67-64-1	-----Acetone	50.	IU
75-15-0	-----Carbon Disulfide	25.	IU
75-35-4	-----1,1-Dichloroethene	25.	IU
75-34-3	-----1,1-Dichloroethane	25.	IU
540-59-0	-----1,2-Dichloroethene (total)	390 25.	IU
67-66-3	-----Chloroform	25.	IU
107-06-2	-----1,2-Dichloroethane	25.	IU
78-93-3	-----2-Butanone	50.	IU
71-55-6	-----1,1,1-Trichloroethane	25.	IU
56-23-5	-----Carbon Tetrachloride	25.	IU
108-05-4	-----Vinyl Acetate	50.	IU
75-27-4	-----Bromodichloromethane	25.	IU
78-87-5	-----1,2-Dichloropropane	25.	IU
10061-01-5	-----cis-1,3-Dichloropropene	25.	IU
79-01-6	-----Trichloroethene	370.	IU
124-48-1	-----Dibromochloromethane	25.	IU
79-00-5	-----1,1,2-Trichloroethane	25.	IU
71-43-2	-----Benzene	25.	IU
10061-02-6	-----Trans-1,3-Dichloropropene	25.	IU
75-25-2	-----Bromoform	25.	IU
108-10-1	-----4-Methyl-2-Pentanone	50.	IU
591-78-6	-----2-Hexanone	50.	IU
127-18-4	-----Tetrachloroethene	25.	IU
78-34-5	-----1,1,2,2-Tetrachloroethane	25.	IU
108-88-3	-----Toluene	25.	IU
108-90-7	-----Chlorobenzene	25.	IU
100-41-4	-----Ethylbenzene	25.	IU
100-42-5	-----Styrene	25.	IU
1330-20-7	-----Xylene (total)	25.	IU

 M/2/4/91  
 R  
 2/6/91



VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V154V3FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3451.0

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: 62935

Level: (low/med) LOW

Date Received: 5/12/91

% Moisture: not dec. 100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

V154V3FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 1.1.2

Matrix: (soil/water) WATER

Lab Sample ID: 3450.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2653

Level: (low/med) LOW

Date Received: 5/12/91

Moisture: not dec.100.

Date Analyzed: 5/16/91

Plum: (pack/cap) PACK

Dilution Factor: 5.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	50.	U
74-83-9-----	Bromomethane	50.	U
75-01-4-----	Vinyl Chloride	50.	U
75-00-3-----	Chloroethane	50.	U
75-09-2-----	Methylene Chloride	25.	U
67-64-1-----	Acetone	<del>25.</del>	<del>U</del> R
75-15-0-----	Carbon Disulfide	25.	U
75-35-4-----	1,1-Dichloroethene	25.	U
75-34-3-----	1,1-Dichloroethane	25.	U
540-59-0-----	1,2-Dichloroethene (total)	340.	
67-66-3-----	Chloroform	25.	U
107-06-2-----	1,2-Dichloroethane	25.	U
78-93-3-----	2-Butanone	50.	U
71-55-6-----	1,1,1-Trichloroethane	25.	U
56-23-5-----	Carbon Tetrachloride	<del>25.</del>	<del>U</del> R
108-05-4-----	Vinyl Acetate	50.	U
75-27-4-----	Bromodichloromethane	25.	U
78-87-5-----	1,2-Dichloropropane	25.	U
10061-01-5-----	cis-1,3-Dichloropropene	25.	U
79-01-6-----	Trichloroethene	410.	
124-48-1-----	Dibromochloromethane	25.	U
79-00-5-----	1,1,2-Trichloroethane	25.	U
71-43-2-----	Benzene	25.	U
10061-02-6-----	Trans-1,3-Dichloropropene	25.	U
75-25-2-----	Bromoform	25.	U
108-10-1-----	4-Methyl-2-Pentanone	50.	U
591-78-6-----	2-Hexanone	50.	U
127-18-4-----	Tetrachloroethene	<del>11.</del>	<del>U</del> R
79-34-5-----	1,1,2,2-Tetrachloroethane	25.	U
108-88-3-----	Toluene	25.	U
108-90-7-----	Chlorobenzene	25.	U
100-41-4-----	Ethylbenzene	25.	U
100-42-5-----	Styrene	25.	U
1330-20-7-----	Xylene (total)	25.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
RELATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V154V3FS

Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00003

Matrix: (soil/water) WATER

Lab Sample ID: 3450.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2653

Level: (low/med) LOW

Date Received: 5/12/91

Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V197V3FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 000001

Matrix: (soil/water) WATER

Lab Sample ID: 3449.9

Sample Wt/vol: 5.0 (g/mL) ML

Lab File ID: J2652

Level: (low/med) LOW

Date Received: 5/12/91

Moisture: not dec. 100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	1600.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	<del>100.</del>	<del>U</del> R
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1400.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	<del>50.</del>	<del>U</del> R
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	62.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	28.	J
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	33.	J
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

see  
0127191

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V197V3FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3449.9

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2652

Level: (low/med) LOW

Date Received: 5/12/91

% Moisture: not dec. 100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V197V3FS

Lab Name: PACE Contract:   
 Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 2   
 Matrix: (soil/water) WATER Lab Sample ID: 3448.0   
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2643   
 Level: (low/med) LOW Date Received: 5/12/91   
 Moisture: not dec. 100. Date Analyzed: 5/16/91   
 Column: (pack/cap) PACK Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	1900.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1400.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U R
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	63.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	29.	J
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	34.	J
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V197V3FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00

Matrix: (soil/water) WATER

Lab Sample ID: 3448.0

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2643

Level: (low/med) LOW

Date Received: 5/12/91

% Moisture: not dec. 100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
NO TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

SI-15  
00159

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3454.5

Sample wt/vol: S. (g/mL) ML

Lab File ID: 62957

Level: (low/med) LOW

Date Received: 5.12.91

% Moisture: not dec.100.

Date Analyzed: 5.19.91

Column: (pack/cap) PACE

Dilution Factor: 20.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/kg) UG/L

Q

74-87-3-----	Chloromethane	200.	U
74-83-9-----	Bromomethane	200.	U
75-01-4-----	Vinyl Chloride	200.	U
75-00-3-----	Chloroethane	200.	U
75-09-2-----	Methylene Chloride	100.	U
67-64-1-----	Acetone	200.	UJ
75-15-0-----	Carbon Disulfide	100.	U
75-35-4-----	1,1-Dichloroethene	100.	U
75-34-3-----	1,1-Dichloroethane	100.	U
540-59-0-----	1,2-Dichloroethene (total)	100.	U
67-66-3-----	Chloroform	100.	U
107-06-2-----	1,2-Dichloroethane	100.	U
78-93-3-----	2-Butanone	200.	U R
71-55-6-----	1,1,1-Trichloroethane	100.	U
56-23-5-----	Carbon Tetrachloride	100.	U
108-05-4-----	Vinyl Acetate	200.	U
75-27-4-----	Bromodichloromethane	100.	U
78-87-5-----	1,2-Dichloropropane	100.	U
10061-01-5-----	cis-1,3-Dichloropropene	100.	U
79-01-6-----	Trichloroethene	100.	U
124-48-1-----	Dibromochloromethane	100.	U
79-00-5-----	1,1,2-Trichloroethane	100.	U
71-43-2-----	Benzene	100.	U
10061-02-6-----	Trans-1,3-Dichloropropene	100.	U
75-25-2-----	Bromoform	100.	U
108-10-1-----	4-Methyl-2-Pentanone	200.	U
591-78-6-----	2-Hexanone	200.	U
127-18-4-----	Tetrachloroethene	2600.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	100.	U
108-88-3-----	Toluene	100.	U
108-90-7-----	Chlorobenzene	100.	U
100-41-4-----	Ethylbenzene	100.	U
100-42-5-----	Styrene	100.	U
1030-20-7-----	Xylene (total)	100.	U



14  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

51-15

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00160

Matrix: (soil/water) WATER

Lab Sample ID: 3454.5

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62957

Level: (low/med) LOW

Date Received: 5/12/91

Moisture: not dec.100.

Date Analyzed: 5/19/91

Column: (pack/cap) PACE

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
 TITLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

51-13DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00165

Matrix: (soil/water) WATER

Lab Sample ID: 3455.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62960

Level: (low/med) LOW

Date Received: 5/12/91

Moisture: not dec.100.

Date Analyzed: 5.19/91

Column: (pack/cap) PAC1

Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	200.	U
74-83-9	-----Bromomethane	200.	U
75-01-4	-----Vinyl Chloride	200.	U
75-00-3	-----Chloroethane	200.	U
75-09-2	-----Methylene Chloride	100.	U
67-64-1	-----Acetone	200.	UJ
75-15-0	-----Carbon Disulfide	100.	U
75-35-4	-----1,1-Dichloroethene	100.	U
75-34-3	-----1,1-Dichloroethane	100.	U
540-59-0	-----1,2-Dichloroethene (total)	100.	U
67-66-3	-----Chloroform	100.	U
107-06-2	-----1,2-Dichloroethane	100.	U
78-93-3	-----2-Butanone	<del>200.</del>	U R
71-55-6	-----1,1,1-Trichloroethane	100.	U
56-23-5	-----Carbon Tetrachloride	100.	U
108-05-4	-----Vinyl Acetate	200.	U
75-27-4	-----Bromodichloromethane	100.	U
78-87-5	-----1,2-Dichloropropane	100.	U
10061-01-5	-----cis-1,3-Dichloropropene	100.	U
79-01-6	-----Trichloroethene	100.	U
124-48-1	-----Dibromochloromethane	100.	U
79-00-5	-----1,1,2-Trichloroethane	100.	U
71-43-2	-----Benzene	100.	U
10061-01-6	-----Trans-1,3-Dichloropropene	100.	U
75-25-2	-----Bromoform	100.	U
108-10-1	-----4-Methyl-2-Pentanone	200.	U
591-78-6	-----2-Hexanone	200.	U
127-18-4	-----Tetrachloroethene	2400.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	100.	U
108-88-3	-----Toluene	100.	U
108-90-7	-----Chlorobenzene	100.	U
100-41-4	-----Ethylbenzene	100.	U
100-42-5	-----Styrene	100.	U
1330-20-7	-----Xylene (total)	100.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
INITIALLY IDENTIFIED COMPOUNDS

31-15DUP

31-15DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00166

Matrix: (soil/water) WATER

Lab Sample ID: 3455.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62960

Level: (low/med) LOW

Date Received: 5/12/91

Moisture: not dec.100.

Date Analyzed: 5/19/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOC/TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

31-15 TB

Lab Name: PACE

Contract:

00171

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3465.0

Sample wt/vol: 5. g/mL ML

Lab File ID: 62962

Level: (low/med) LOW

Date Received: 5/12/91

% Moisture: not dec.100.

Date Analyzed: 5/19/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
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74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	9.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U R
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

1E  
VOLATILE ORGANIC ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

51-15 TB

51-15 TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00172

Matrix: (soil/water) WATER

Lab Sample ID: 3465.0

Sample Wt/vol: 5. (g/mL) mL

Lab File ID: 62962

Level: (low/med) LOW

Date Received: 5/12/91

Moisture: not dec.100.

Date Analyzed: 5/19/91

Column: (pack/cap) PACH

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
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19.				
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21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1A  
TITLE ORGANICS ANALYSIS DATA SHEET

54-13

b Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00177

Matrix: (soil/water) WATER

Lab Sample ID: 3460.0

Sample Wt/vol: 5. (g/mL) ML

Lab File ID: 62984

Level: (low/med) LOW

Date Received: 5/12/91

Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PAC

Dilution Factor: 10.00

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	100.	U
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	50.	U
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U R
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	50.	U
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	1500.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	UJ
108-90-7	-----Chlorobenzene	50.	UJ
100-41-4	-----Ethylbenzene	50.	UJ
100-42-5	-----Styrene	50.	UJ
1330-20-7	-----Xylene (total)	50.	UJ

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

64-13

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00178

Matrix: (soil/water) WATER

Lab Sample ID: 3460.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62984

Level: (low/med) LOW

Date Received: 5/12/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACH

Dilution Factor: 10.00

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
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6A  
VOL% LE ORGANICS INITIAL CALIBRATION DATA

Lab Name: PACE Contract:  
Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 00183  
Instrument ID: G Calibration Date(s): 5/17/91 5/17/91  
Matrix: (soil/water) WATER Level: (low/med): LOW Column: (pack/cap) PACK  
in RRF for SPCC(#) = .300 (0.250 for Bromoform) Max %RSD for CCC(\*) = 30.0%

LAB FILE ID: RRF020= G2939 RRF050= G2942  
RRF100= G2941 RRF150= G2940 RRF200= G2938

COMPOUND	RRF020	RRF050	RRF100	RRF150	RRF200	RRF	% RSD
Chloromethane #	.626	.657	.643	.599	.686	.642	5.0#
Bromomethane	1.740	1.726	1.761	1.573	1.302	1.620	11.9
Vinyl Chloride *	1.070	1.071	1.144	1.114	1.228	1.125	5.8*
Chloroethane	.680	.684	.710	.687	.813	.715	7.8
Methylene Chloride	1.550	1.846	1.532	1.488	1.626	1.608	8.8
Acetone	.319	.332	.261	.247	.321	.296	13.1
Carbon Disulfide	1.184	1.301	1.334	1.555	1.912	1.457	19.7
1,1-Dichloroethene *	1.552	1.583	1.641	1.646	1.902	1.665	8.3*
1,1-Dichloroethane #	2.790	2.818	2.782	2.769	3.144	2.860	5.6#
1,2-Dichloroethene (total)	1.309	1.325	1.360	1.351	1.619	1.393	9.2
Chloroform *	3.432	3.666	3.630	3.515	4.007	3.650	6.0*
1,2-Dichloroethane	1.821	1.995	1.952	1.826	1.981	1.915	4.4
2-Butanone	.016	.018	.037	.035	.042	.033	31.1
1,1,1-Trichloroethane	.704	.748	.792	.773	.901	.784	9.4
Carbon Tetrachloride	.664	.727	.767	.760	.907	.765	11.7
Vinyl Acetate	.311	.355	.332	.332	.427	.351	12.8
1,1-Dichloromethane	.735	.832	.881	.849	1.041	.868	12.8
1,2-Dichloropropane *	.436	.461	.471	.462	.540	.474	8.3*
cis-1,3-Dichloropropene	.628	.668	.684	.693	.845	.704	11.8
1,1-Dichloroethene	.678	.705	.709	.651	.819	.712	9.0
1,1-Dibromochloromethane	.850	1.008	1.023	.978	1.163	1.005	11.1
1,1,2-Trichloroethane	.477	.514	.495	.463	.543	.498	6.3
Benzene	.841	.866	.879	.839	1.019	.889	8.4
trans-1,3-Dichloropropene	.424	.472	.464	.456	.554	.474	10.2
Bromoform #	.431	.571	.577	.556	.659	.559	14.7#
1-Methyl-2-Pentanone	.312	.392	.347	.319	.397	.353	11.3
2-Hexanone	.256	.304	.249	.241	.312	.272	12.1
1,1,2-Trichloroethene	.645	.678	.674	.639	.769	.681	7.6
1,1,2,2-Tetrachloroethane #	.631	.706	.664	.646	.776	.685	8.5#
Toluene *	.751	.755	.752	.728	.863	.770	6.9*
Chlorobenzene #	1.451	1.469	1.434	1.431	1.697	1.496	7.6#
Methylbenzene *	.498	.533	.523	.509	.604	.533	7.8*
Styrene	1.250	1.301	1.304	1.274	1.502	1.326	7.6
Styrene (total)	.753	.775	.740	.726	.913	.781	9.7
Styrene-d8	1.702	1.636	1.720	1.650	1.650	1.672	2.2
Bromofluorobenzene	1.224	1.215	1.261	1.192	1.175	1.213	2.7
1,1-Dichloroethane-d4	2.129	2.259	2.289	2.108	1.938	2.144	6.5

FORM VI VOA

1/87 Rev.





DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEMS  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/12/91

Chemical Analyses Performed By  
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

All positive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds in the standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

Cooler temperature upon receipt of W.R. Grace samples by the laboratory was 8°C; cooler temperature for the UniFirst samples was 7°C. Temperatures outside the 4°C  $\pm$  2°C range may adversely affect the volatile compounds.

No positive results were reported in any of the samples in this sample delivery group.

Foaming, especially with Samples S6-15, S6-15DUP, and S5-10, occurred during analysis of all samples except the trip blank and field blanks.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Seven samples were collected and submitted to PACE, Inc. on May 12, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
V140V3FS	3445	05/12/91
V140V3FB	3447	05/12/91
S1-15FB	3456	05/12/91
S5-10	3461	05/12/91
S6-15	3462	05/12/91
S6-15DUP	3463	05/12/91
S6-15TB	3464	05/12/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

Samples from the W.R. Grace treatment plant were preserved with ferrous ammonium sulfate and HCl. Holding times were met for both samples.

Samples from the UniFirst treatment plant were apparently not preserved. All UniFirst samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all UniFirst samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Peaks were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

### **A. Initial**

Initial calibration criteria were met on 5/16/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/21/91 with the exception of the RF for 1,1-dichloroethane (actual 0.01137; criteria 0.1) and the % difference for 1,1-dichloroethane (actual 99.6; criteria 25). Detection limits for 1,1-dichloroethane were rejected in Sample V140V3FB.

Continuing calibration criteria were met on 5/22/91 (2:33) with the exception of the % difference for trans-1,2-dichloroethene (actual 28.21; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/22/91 (12:57) with the exception of the % difference for bromoform (actual 30.02; criteria 25). Data were not affected.

#### **IV. Blanks**

The trip blank, field blanks, and method blanks were clean.

#### **V. Surrogate Recovery**

The recoveries for toluene-d8 in Samples S6-15TB and S6-15MSD were below QC criteria. Because no positive results were reported for any field samples, data were not qualified.

All other surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-15. The percent recovery for toluene was below QC criteria in the MSD. The relative percent difference for toluene was above QC criteria. No positive results for this compound were detected, so no data were qualified.

The laboratory spiked the MS and MSD samples with twice the appropriate spiking compound concentrations. Data quality was not affected.

#### **VII. Field Duplicates**

Samples S6-15 and S6-15DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### **VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

#### **IX. TCL Compound Identification**

No positive results were reported for any of the samples in this sample delivery group.

#### **X. Compound Quantitation and Reported Detection Limits**

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined

through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Results and detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were reported for this sample delivery group.

#### **XII. System Performance**

System performance was acceptable.

#### **XIII. Overall Assessment of Data for a Case**

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.



W. R. GRACE

PACE PROJECT Number: 810512500

00030

PACE Sample Number:

95 0034456

Date Collected:

05/12/91

Date Received:

05/12/91

Parameter

Units

MDL

V140 V3 FS

ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

828  
7/9/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810512500

00004

PACE Sample Number:

95 0034472

Date Collected:

05/12/91

Date Received:

05/12/91

Parameter

Units

MDL

V140 V3 FB

ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND u
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	<del>0.5</del>	<del>ND</del> R
trans-1,2-Dichloroethene	ug/L	0.5	ND u
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

213  
7/9/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810512501

PACE Sample Number:

95 0034561

Date Collected:

05/12/91

Date Received:

05/12/91

ParameterUnitsMDLS1-15 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	WJ
Chloroethane	ug/L	0.5	ND	9/9/91
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810512501

00041

PACE Sample Number:

95 0034618

Date Collected:

05/12/91

Date Received:

05/12/91

ParameterUnitsMDLS5-10ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

w 2/14/91

MDL Method Detection Limit  
ND Not detected at or above the MDL.

00045

UNIFIRST/ENSR

PACE Project Number: 810512501

PACE Sample Number:

95 0034626

Date Collected:

05/12/91

Date Received:

05/12/91

ParameterUnitsMDLS6-15ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

22 8/23/91

MDL Method Detection Limit  
 ND Not detected at or above the MDL.

00049

UNIFIRST/ENSR

PACE Project Number: 810512501

PACE Sample Number:

95 0034634

Date Collected:

05/12/91

Date Received:

05/12/91

ParameterUnitsMDLS6-15 DupORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	W 2.5 7/9/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00053

UNIFIRST/ENSR

PACE Project Number: 810512501

PACE Sample Number:

95 0034642

Date Collected:

05/12/91

Date Received:

05/12/91

ParameterUnitsMDLS6-15 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	nd 2/23/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/13/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991  
Rev. 9/6/91

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233



## EXECUTIVE SUMMARY

Tetrachloroethene was the only compound detected above the detection limit in the Unifirst samples and vinyl chloride, total 1,2-dichloroethene, and trichloroethene were the only compounds detected in Grace samples. No tentatively identified compounds (TICs) were detected.

Cooler temperature for the Grace samples was 9°C; cooler temperature for the UniFirst samples was 18°C when received in the laboratory. Temperatures outside the 4°C  $\pm$  2°C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Seven treatment system samples were collected (both Unifirst and Grace) and submitted for analysis to PACE, Inc. on May 13, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses. S1-16 was used for the field duplicate, matrix spike, and matrix spike duplicate.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
V131V4FS	3493	05/13/91
V131V4TB	3494	05/13/91
V154V4FS	3596	05/13/91
V197V4FS	3595	05/13/91
S1-16	3470	05/13/91
S1-16TB	3472	05/13/91
S4-14	3476	05/13/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

### I. Holding Times

All sample analyses met holding times.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met with the exception of 2-butanone which had an average RRF of 0.030 and %RSD of 39.8. Detection limits for 2-butanone were rejected.

#### B. Continuing

Continuing calibration criteria not met are summarized below.

Date	Time	Compound	RF	%D
5/20	1:47	2-butanone	0.032 (0.1)	
		Bromomethane		32.9 (25)
		Methylene Chloride		26.5 (25)
		Benzene		26.7 (25)
5/20	14:24	2-Butanone	0.024 (0.1)	28.3 (25)
		Bromoform		29.1 (25)
5/21	7:54	2-Butanone	0.014 (0. )	56.1 (25)

( ) Acceptance criteria

Detection limits for 2-butanone were rejected. All other data were not affected.

#### **IV. Blanks**

Methylene chloride was detected in the VBLK 01 at 3 ppb and in S1-16TB at 7 ppb. All other blanks were acceptable. Methylene chloride results were qualified as less than the reported values.

#### **V. Surrogate Recovery**

All surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.

#### **VII. Field Duplicates**

Tetrachloroethene was detected in the sample at 3200 ppb, the field duplicate at 3500 ppb, in the MS at 3100 ppb, and in the MSD at 3000 ppb (RSD 6.8). The data are acceptable.

#### **VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

#### **IX. TCL Compound Identification**

Target compounds were properly identified.

#### **X. Compound Quantitation and Reported Detection Limits**

Detection limits were acceptable with regard to the supporting data. Trichloroethene was rejected from the field duplicate since it was not detected in the sample. 1,1,1-Trichloroethane was rejected from the MS and MSD since it was not detected in either the sample or field duplicate.

#### **XI. Tentatively Identified Compounds**

No TICs were detected.

## **XII. System Performance**

System performance requires attention. Manual integrations should be addressed. Response factor criteria should be monitored.

## **XIII. Overall Assessment of Data for a Case**

Detection limits for 2-butanone were rejected in all samples.

Trichloroethene was rejected in the field duplicates MS and MSD analyses.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V13000520

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3493.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62973

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	550.	
75-00-3	Chloroethane	100.	U
75-09-2	Methylene Chloride	50.	U
67-64-1	Acetone	100.	U
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	50.	U
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethene (total)	1100.	
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	360.	
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	50.	U
10061-02-6	Trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachloroethene	50.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	50.	U
108-90-7	Chlorobenzene	50.	U
100-41-4	Ethylbenzene	50.	U
100-42-5	Styrene	50.	U
1330-20-7	Xylene (total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
- TENTATIVELY IDENTIFIED COMPOUNDS

V131V4FS

0.0021

Site: PACE

Contract:

Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil water) WATER

Lab Sample ID: 3493.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62973

Level: (low, med) LOW

Date Received: 5/14/91

Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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30.				



1A  
VOI TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

000028

Name: PACE

Contract:

Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3494.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62988

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack./cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
---------	----------	--	---

74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
 TENTATIVELY IDENTIFIED COMPOUNDS

V131V4TB

00029

de: PACE

Contract:

de: PACE

Case No.: EPC

SAS No.:

SDG No.:

ix: (soil/water) WATER

Lab Sample ID: 3494.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62988

Level: (low/med) LOW

Date Received: 5/14/91

Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00033

PAGE

Contract:

: PACE

Case No.: EPC

SAS No.:

SDG No.:

: (soil/water) WATER

Lab Sample ID: 3496.0

ple wt/vol: 5. (g/mL) ML

Lab File ID: 62976

level: (low/med) LOW

Date Received: 5/14/91

Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACT

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	50.	U
74-83-9	-----Bromomethane	50.	U
75-01-4	-----Vinyl Chloride	50.	U
75-00-3	-----Chloroethane	50.	U
75-09-2	-----Methylene Chloride	25.	U
67-64-1	-----Acetone	50.	U
75-15-0	-----Carbon Disulfide	25.	U
75-35-4	-----1,1-Dichloroethene	25.	U
75-34-3	-----1,1-Dichloroethane	25.	U
540-59-0	-----1,2-Dichloroethene (total)	320.	
67-66-3	-----Chloroform	25.	U
107-06-2	-----1,2-Dichloroethane	25.	U
78-93-3	-----2-Butanone	50.	U
71-55-6	-----1,1,1-Trichloroethane	25.	U
56-23-5	-----Carbon Tetrachloride	25.	U
108-05-4	-----Vinyl Acetate	50.	U
75-27-4	-----Bromodichloromethane	25.	U
78-87-5	-----1,2-Dichloropropane	25.	U
10061-01-5	-----cis-1,3-Dichloropropene	25.	U
79-01-6	-----Trichloroethene	300.	
124-48-1	-----Dibromochloromethane	25.	U
79-00-5	-----1,1,2-Trichloroethane	25.	U
71-43-2	-----Benzene	25.	U
10061-02-6	-----Trans-1,2-Dichloropropene	25.	U
75-25-2	-----Bromoform	25.	U
108-10-1	-----4-Methyl-2-Pentanone	50.	U
591-78-6	-----2-Hexanone	50.	U
127-18-4	-----Tetrachloroethene	25.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	25.	U
108-88-3	-----Toluene	25.	U
108-90-7	-----Chlorobenzene	25.	U
100-41-4	-----Ethylbenzene	25.	U
100-42-5	-----Styrene	25.	U
1330-20-7	-----Xylene (total)	25.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
 TENTATIVELY IDENTIFIED COMPOUNDS

V154V4FS

00034

Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3496.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62976

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V197V4F8

00040

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAG No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3495.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2989

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	g
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	1500.	U
75-00-3	Chloroethane	100.	U
75-09-2	Methylene Chloride	50.	U
67-64-1	Acetone	100.	U
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethane	50.	U
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethane (total)	1700	U
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U
71-55-6	1,1,1-Trichloroethane	50.	U
55-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethane	83.	U
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	50.	U
10061-02-6	Trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachloroethane	50.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	30.	J
108-90-7	Chlorobenzene	50.	U
100-41-4	Ethylbenzene	30.	J
100-42-5	Styrene	50.	U
1330-20-7	Xylene (total)	50.	U

MI 9/4/91

R  
OK  
9/6/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V197V4FS

00041

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3495.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62989

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SI-00113

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3470.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2970

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	200.	U
74-83-9	-----Bromomethane	200.	U
75-01-4	-----Vinyl Chloride	200.	U
75-00-3	-----Chloroethane	200.	U
75-09-2	-----Methylene Chloride	340.	u
67-64-1	-----Acetone	200.	U
75-15-0	-----Carbon Disulfide	100.	U
75-35-4	-----1,1-Dichloroethene	100.	U
75-34-3	-----1,1-Dichloroethane	100.	U
540-59-0	-----1,2-Dichloroethene (total)	100.	U
67-66-3	-----Chloroform	100.	U
107-06-2	-----1,2-Dichloroethane	100.	U
78-93-3	-----2-Butanone	200.	u R
71-55-6	-----1,1,1-Trichloroethane	100.	U
56-23-5	-----Carbon Tetrachloride	100.	U
108-05-4	-----Vinyl Acetate	200.	U
75-27-4	-----Bromodichloromethane	100.	U
78-87-5	-----1,2-Dichloropropane	100.	U
10061-01-5	-----cis-1,3-Dichloropropene	100.	U
79-01-6	-----Trichloroethene	100.	U
124-48-1	-----Dibromochloromethane	100.	U
79-00-5	-----1,1,2-Trichloroethane	100.	U
71-43-2	-----Benzene	100.	U
10061-02-6	-----Trans-1,3-Dichloropropene	100.	U
75-25-2	-----Bromoform	100.	U
108-10-1	-----4-Methyl-2-Pentanone	200.	U
591-78-6	-----2-Hexanone	200.	U
127-18-4	-----Tetrachloroethene	3200.	
79-34-5	-----1,1,2,2-Tetrachloroethane	100.	U
108-88-3	-----Toluene	100.	U
108-90-7	-----Chlorobenzene	100.	U
100-41-4	-----Ethylbenzene	100.	U
100-42-5	-----Styrene	100.	U
1330-20-7	-----Xylene(total)	100.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
T TATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-16

00114

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3470.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2970

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

SI-18 <sup>00120</sup> DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3470.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2901

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: ~~1.00~~ 20

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

M/

7/5/90

74-87-3-----	Chloromethane	<del>200 10</del>	U
74-83-9-----	Bromomethane	<del>200 10</del>	U
75-01-4-----	Vinyl Chloride	<del>200 10</del>	U
75-00-3-----	Chloroethane	<del>200 10</del>	U
75-09-2-----	Methylene Chloride	100 5	U
67-64-1-----	Acetone	<del>200 10</del>	U
75-15-0-----	Carbon Disulfide	100 5	U
75-35-4-----	1,1-Dichloroethene	100 5	U
75-34-3-----	1,1-Dichloroethane	100 5	U
540-59-0-----	1,2-Dichloroethene (total)	100 5	U
67-66-3-----	Chloroform	100 5	U
107-06-2-----	1,2-Dichloroethane	100 5	U
78-93-3-----	2-Butanone	<del>200 10</del>	U R
71-55-6-----	1,1,1-Trichloroethane	100 5	U
56-23-5-----	Carbon Tetrachloride	100 5	U
108-05-4-----	Vinyl Acetate	<del>200 10</del>	U
75-27-4-----	Bromodichloromethane	100 5	U
78-87-5-----	1,2-Dichloropropane	100 5	U
10061-01-5-----	cis-1,3-Dichloropropene	100 5	U
79-01-6-----	Trichloroethene	<del>200 10</del>	U R
124-48-1-----	Dibromochloromethane	100 5	U
79-00-5-----	1,1,2-Trichloroethane	100 5	U
71-43-2-----	Benzene	100 5	U
10061-02-6-----	Trans-1,3-Dichloropropene	100 5	U
75-25-2-----	Bromoform	100 5	U
108-10-1-----	4-Methyl-2-Pentanone	200 10	U
591-78-6-----	2-Hexanone	<del>200 10</del>	U
127-18-4-----	Tetrachloroethene	<del>350 10</del>	U
79-34-5-----	1,1,2,2-Tetrachloroethane	100 5	U
108-88-3-----	Toluene	100 5	U
108-90-7-----	Chlorobenzene	100 5	U
100-41-4-----	Ethylbenzene	100 5	U
100-42-5-----	Styrene	100 5	U
1330-20-7-----	Xylene(total)	100 5	U

Resubmitted Data

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SI-16DUP

00121

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3470.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2901

Level: (low/med) LOW

Date Received: 5/14/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-16 TB

00127

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3472.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62971

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L 0

74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	7.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U
10061-02-6	Trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
 TENTATIVELY IDENTIFIED COMPOUNDS

S1-16 TB

00128

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3472.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62971

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S4-14

00133

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3476.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63003

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACE

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	100.	U
75-00-3	Chloroethane	100.	U
75-09-2	Methylene Chloride	50.	U
67-64-1	Acetone	100.	U
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	50.	U
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethene (total)	50.	U
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U R
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	50.	U
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	50.	U
10061-02-6	Trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachloroethene	1500.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	50.	U
108-90-7	Chlorobenzene	50.	U
100-41-4	Ethylbenzene	50.	U
100-42-5	Styrene	50.	U
1330-20-7	Xylene (total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
 TENTATIVELY IDENTIFIED COMPOUNDS

S4-14

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00134

Matrix: (soil/water) WATER

Lab Sample ID: 3476.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63003

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEMS  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/13/91

Chemical Analyses Performed By  
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

All positive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds in the standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

Cooler temperature upon receipt of W.R. Grace samples by the laboratory was 9°C; cooler temperature for the UniFirst samples was 18°C. Temperatures outside the 4°C  $\pm$  2°C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



### Case Narrative

Seven samples were collected and submitted to PACE, Inc. on May 13, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-16FB	3471	05/13/91
S5-11	3477	05/13/91
S6-16	3479	05/13/91
S6-16TB	3480	05/13/91
V140V4FS	3491	05/13/91
V140V4FB	3492	05/13/91
S6-15TB	3464	05/12/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

Samples from the W.R. Grace treatment plant were preserved with ferrous ammonium sulfate and HCl. Holding times were met for all W.R. Grace samples.

Samples from the UniFirst treatment plant were apparently not preserved. All UniFirst samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all UniFirst samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Peaks were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

### **A. Initial**

Initial calibration criteria were met on 5/16/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/21/91 with the exception of the RF for 1,1-dichloroethane (actual 0.01137; criteria 0.1) and the % difference for 1,1-dichloroethane (actual 99.6; criteria 25). Detection limits for 1,1-dichloroethane were rejected in Sample V140V4FB.

Continuing calibration criteria were met on 5/22/91 (12:57) with the exception of the % difference for bromoform (actual 30.02; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/23/91.

#### **IV. Blanks**

The trip blank, field blanks, and method blanks were clean.

#### **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample V140V4FS. The percent recoveries for 1,1-dichloroethene were below QC criteria in the MS and MSD. No positive results for this compound were detected, so no data were qualified.

The laboratory spiked the MS and MSD samples with twice the appropriate spiking compound concentrations. Data quality was not affected.

#### **VII. Field Duplicates**

Samples V140V4FS and V140V4FD were submitted as duplicate samples. However, the laboratory apparently did not run Sample V140V4FD, but ran V140V4FS as a laboratory duplicate. Clarification has been requested from the laboratory. No compounds were detected in either sample.

#### **VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

#### **IX. TCL Compound Identification**

TCL compound identifications were acceptable.

#### **X. Compound Quantitation and Reported Detection Limits**

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Results and detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were reported for this sample delivery group.

#### **XII. System Performance**

System performance was acceptable.

#### **XIII. Overall Assessment of Data for a Case**

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

UNIFIRST

PACE Project Number: 810514500

00033

PACE Sample Number:

95 0034715

Date Collected:

05/13/91

Date Received:

05/14/91

ParameterUnitsMDLS1-16 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

ND 2K.6

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST

PACE Project Number: 810514500

PACE Sample Number:

95 0034774 00037

Date Collected:

05/13/91

Date Received:

05/14/91

ParameterUnitsMDLS5-11ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND w/ 2KJ 7/9/91
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	1.0 J
1,1-Dichloroethane	ug/L	0.5	2.6 J
trans-1,2-Dichloroethene	ug/L	0.5	ND w/
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	24.6 25 J / ml
Carbon tetrachloride	ug/L	0.5	ND w/
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

UNIFIRST

PACE Project Number: 810514500

PACE Sample Number:

95 0034790

00044

Date Collected:

05/13/91

Date Received:

05/14/91

ParameterUnitsMDLS6-16ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	as 2/8/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



UNIFIRST

PACE Project Number: 810514500

PACE Sample Number:

95 0034804 00048

Date Collected:

05/13/91

Date Received:

05/14/91

ParameterUnitsMDLS6-16 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

u3 2K3 7/9/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810514501

PACE Sample Number:

Date Collected:

Date Received:

Parameter

95 0034910

05/13/91

05/14/91

VI40 V4 FS

00052

ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810514501

PACE Sample Number:

Date Collected:

Date Received:

Parameter

95 0034928 00060

05/13/91

05/14/91

V140 V4 FB

Units

MDL

ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND u) <i>exd 7/9/91</i>
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	<del>0.5</del>	<del>ND</del> R
trans-1,2-Dichloroethene	ug/L	0.5	ND u)
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.



DATA VALIDATION REPORT

FOR

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

SEMIVOLATILES ANALYSIS DATA  
Samples Collected May 13, 1991

Chemical Analyses Performed by:

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233



## EXECUTIVE SUMMARY

No target compound list (TCL) compounds were detected in Samples S1-16 or S6-16; bis(2-ethylhexyl)phthalate was detected in S1-16FB at 63 ppb. No qualifiers have been applied to these reported results. One early-eluting unknown peak observed in all sample analyses has been rejected as a blank contaminant; the presence of tetrachloroethene in S6-16 is noted but not reported since it is more accurately determined from the volatile fraction.

Problems identified on the Chain of Custody (COC) records include: (1) 3 COC's are included although only 2 are pertinent to this data package; (2) separate entries should not be made for MS/MSD samples; (3) cross-outs are incorrectly made and are not initialled or dated; and (4) cold storage is not clearly documented.

Validation of the data package is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying Form I's copied from the data package to qualify some of the results as appropriate based on the findings of the data review.

### Case Narrative

Five water samples (including separate samples for matrix spike/matrix spike duplicate) were collected on May 13, 1991 and received by Pace, Inc. on May 14, 1991. Analysis of semivolatile organic compounds according to EPA Contract Laboratory Program (CLP) Statement of Work 2/88 was performed.

The following samples are included in this Sample Delivery Group (SDG):

<u>Client ID</u>	<u>Lab ID</u>	<u>Collection Date</u>
S1-16	3470	5/13/91
S1-16 FB	3471	5/13/91
S6-16	3479	5/13/91

Semivolatiles analysis results for these samples were reported by the laboratory under Project Number 810514.500.

## Semivolatiles

The areas reviewed during the semivolatiles validation procedure are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples were extracted and analyzed within the established holding times.

The COC records do not indicate that the samples were placed in cold storage in the field, at the time of collection. This activity is inferred from notations of cooler temperature on arrival at the laboratory. Cold storage is a form of preservation and must be documented, or the validator must assume it was not performed. No qualifiers are applied to the results in this case.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be done as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. In several cases, areas for surrogate peaks have also been manually integrated; these must be documented in the data package due to the potential effect on the reported results. The data in this SDG are not affected as no positive results are reported with the exception of a low level of bis(2-ethylhexyl)phthalate in the field blank.

### **A. Initial**

Samples were analyzed under a single initial calibration (IC) performed on 6/17/91, on instrument 7001D. All criteria were met in this calibration with the exception of the Percent Relative Standard Deviation (%RSD) for 3-nitroaniline (37.8) and diethyl phthalate (36.3). No data are affected.

### **B. Continuing**

All samples, including the MS/MSD and SBLK1, were analyzed on 6/18/91 under a separate continuing calibration (CC) standard. All criteria were met in this calibration with the exception of the Percent Difference (%D) for bis(2-chloroisopropyl)ether (41.2), fluorene (28.9), 4-nitroaniline (29.9), 3,3'-dichlorobenzidine (37.8), and 2,4,6-tribromophenol (31.6). No data are affected.



#### **IV. Blanks**

No target compounds were detected in SBLK1, extracted 5/17 and analyzed 6/18. No tentatively identified compounds were reported, however a peak at retention time (RT) approximately 7.5 minutes is visible in the chromatogram, prior the first surrogate standard. A peak at the same relative retention time was reported in Samples S1-16FB (analyzed 6/19) and S1-16 (analyzed 6/18), and was observed but not reported in S6-16. These sample results have been rejected as blank contaminants. Library searches of the peaks in SBLK1 and S6-16 were requested from and provided by the laboratory; they are attached to this report for reference, and confirm this peak as a blank contaminant.

Bis(2-ethylhexyl)phthalate was detected in the field blank, S1-16 FB, at 63 ug/L. This compound was not detected in any other samples; no data are affected.

#### **V. Surrogate Recovery**

All surrogate recoveries were within established QC criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample S1-16. All Percent Recovery (%R) and Relative Percent Difference (RPD) values were within established QC criteria.

#### **VII. Field Duplicates**

No field duplicate pairs were analyzed in this SDG.

#### **VIII. Internal Standards Performance**

All internal standard areas and retention times are within acceptable limits.

#### **IX. TCL Compound Identification**

Compound identifications are properly reported and documented in all cases.

#### **X. Compound Quantitation and Reported Detection Limits**

Results and quantitation limits are correctly reported; no dilutions were performed in this SDG.

#### **XI. Tentatively Identified Compounds**

One early-eluting TIC was rejected in Sample S1-16 and in Sample S1-16 FB due to observation of a similar peak at the same retention time in both the field blank and SBLK1. The same peak was observed in Sample S6-16 but was not reported; a library search was provided by the laboratory at the request of this validator, and is attached to this report. The documentation confirms this peak as a blank contaminant.

The Case Narrative states that tetrachloroethene was detected as a TIC in Sample S6-16, and was not reported because it is a volatile analyte. No library search was included in the package to document this fact. The library search for this peak was requested and has been provided by the laboratory to confirm the identification of this peak; a copy is attached to this report for reference. The reported value is rejected because it is a volatile target compound, and is more accurately reported in that fraction.

#### **XII. System Performance**

No problems with system performance were observed in the data package. It is noted, however, that the ribbon on the GC/MS data system printer needs to be replaced, as the copies of the printouts are very light and almost illegible.

#### **XIII. Overall Assessment**

Sample results are usable as reported with the exception of the early-eluting TIC peak which has been rejected in all 3 samples, and the tetrachloroethene response which has been rejected in favor of its quantitation from the volatile fraction.

Incomplete, unclear, or inaccurate Chain of Custody records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the custody records included in this data package:

1. More custody records are included than are pertinent to this data package; this could cause confusion as to the disposition of the rest of the data requested on the COC's.

2. Cold storage, a required form of preservation, is not documented.

3. MS/MSD analyses are a laboratory-initiated quality control activity; there should not be separate samples on the COC identified as "MS" and "MSD".

4. Cross-outs on the records are not initialled and dated, and they are not done as a single line through the incorrect entry.

Manually integrated areas should be documented in the data package to allow review of the integration method used and to confirm that the integration was consistent in both standards and samples, where applicable. This is especially important when areas for internal standards and/or surrogates are manually integrated.

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

S6-16  
00035

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3479.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2706

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/17/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/19/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

108-95-2-----Phenol	10.	U
111-44-4-----bis(2-Chloroethyl) ether	10.	U
95-57-8-----2-Chlorophenol	10.	U
541-73-1-----1,3-Dichlorobenzene	10.	U
106-46-7-----1,4-Dichlorobenzene	10.	U
100-51-6-----Benzyl alcohol	10.	U
95-50-1-----1,2-Dichlorobenzene	10.	U
95-48-7-----2-Methylphenol	10.	U
108-60-1-----bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----4-Methylphenol	10.	U
621-64-7-----N-Nitroso-di-n-propylamine	10.	U
67-72-1-----Hexachloroethane	10.	U
98-95-3-----Nitrobenzene	10.	U
78-59-1-----Isophorone	10.	U
88-75-5-----2-Nitrophenol	10.	U
105-67-9-----2,4-Dimethylphenol	10.	U
65-85-0-----Benzoic acid	50.	U
111-91-1-----bis(2-Chloroethoxy) methane	10.	U
120-83-2-----2,4-Dichlorophenol	10.	U
120-82-1-----1,2,4-Trichlorobenzene	10.	U
91-20-3-----Naphthalene	10.	U
106-47-8-----4-Chloroaniline	10.	U
87-68-3-----Hexachlorobutadiene	10.	U
59-50-7-----4-Chloro-3-methylphenol	10.	U
91-57-6-----2-Methylnaphthalene	10.	U
77-47-4-----Hexachlorocyclopentadiene	10.	U
88-06-2-----2,4,6-Trichlorophenol	10.	U
95-95-4-----2,4,5-Trichlorophenol	50.	U
91-58-7-----2-Chloronaphthalene	10.	U
88-74-4-----2-Nitroaniline	50.	U
131-11-3-----Dimethylphthalate	10.	U
208-96-8-----Acenaphthylene	10.	U
606-20-2-----2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S6-16

00036

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3479.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2706

Level: (low/med) LOW

Date Received: 5/14/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/17/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/19/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

99-09-2-----3-Nitroaniline	50.	U
83-32-9-----Acenaphthene	10.	U
51-28-5-----2,4-Dinitrophenol	50.	U
100-02-7-----4-Nitrophenol	50.	U
132-64-9-----Dibenzofuran	10.	U
121-14-2-----2,4-Dinitrotoluene	10.	U
84-66-2-----Diethylphthalate	10.	U
7005-72-3-----4-Chlorophenyl-phenylether	10.	U
86-73-7-----Fluorene	10.	U
100-01-6-----4-Nitroaniline	50.	U
534-52-1-----4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----N-Nitrosodiphenylamine	10.	U
101-55-3-----4-Bromophenyl-phenylether	10.	U
118-74-1-----Hexachlorobenzene	10.	U
87-86-5-----Pentachlorophenol	50.	U
85-01-8-----Phenanthrene	10.	U
120-12-7-----Anthracene	10.	U
84-74-2-----Di-n-butylphthalate	10.	U
206-44-0-----Fluoranthene	10.	U
129-00-0-----Pyrene	10.	U
85-68-7-----Butylbenzylphthalate	10.	U
91-94-1-----3,3'-Dichlorobenzidine	20.	U
56-55-3-----Benzo(a)anthracene	10.	U
218-01-9-----Chrysene	10.	U
117-81-7-----bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----Di-n-octylphthalate	10.	U
205-99-2-----Benzo(b)fluoranthene	10.	U
207-08-9-----Benzo(k)fluoranthene	10.	U
50-32-8-----Benzo(a)pyrene	10.	U
193-39-5-----Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----Dibenzo(a,h)anthracene	10.	U
191-24-2-----Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S6-16

00037

Lab Name: PACE Contract: \_\_\_\_\_  
Lab Code: PACE Case No.: EPC SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_  
Matrix: (soil/water) WATER Lab Sample ID: 3479.0  
Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2706  
Level: (low/med) LOW Date Received: 5/14/91  
Moisture: not dec.100. dec. 0. Date Extracted: 5/17/91  
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/19/91  
GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Number TICs found: 0 /

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	<del>Unknown</del> R*	<del>7.38</del>		
2.				
3.				
4.	*black contaminant			
5.	CAE 7/5/91			
6.				
7.				
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

00018  
51-16 8

Sample Name: PACE Contract: \_\_\_\_\_  
 Lab Code: PACE Case No.: EPC SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_  
 Matrix: (soil/water) WATER Lab Sample ID: 3470.7  
 Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2703  
 Level: (low/med) LOW Date Received: 5/14/91  
 Moisture: not dec.100. dec. 0. Date Extracted: 5/17/91  
 Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/18/91  
 PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

108-95-2-----Phenol	10.	U
111-44-4-----bis(2-Chloroethyl) ether	10.	U
95-57-8-----2-Chlorophenol	10.	U
541-73-1-----1,3-Dichlorobenzene	10.	U
106-46-7-----1,4-Dichlorobenzene	10.	U
100-51-6-----Benzyl alcohol	10.	U
95-50-1-----1,2-Dichlorobenzene	10.	U
95-48-7-----2-Methylphenol	10.	U
108-60-1-----bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----4-Methylphenol	10.	U
621-64-7-----N-Nitroso-di-n-propylamine	10.	U
67-72-1-----Hexachloroethane	10.	U
98-95-3-----Nitrobenzene	10.	U
78-59-1-----Isophorone	10.	U
88-75-5-----2-Nitrophenol	10.	U
105-67-9-----2,4-Dimethylphenol	10.	U
65-85-0-----Benzoic acid	50.	U
111-91-1-----bis(2-Chloroethoxy) methane	10.	U
120-83-2-----2,4-Dichlorophenol	10.	U
120-82-1-----1,2,4-Trichlorobenzene	10.	U
91-20-3-----Naphthalene	10.	U
106-47-8-----4-Chloroaniline	10.	U
87-68-3-----Hexachlorobutadiene	10.	U
59-50-7-----4-Chloro-3-methylphenol	10.	U
91-57-6-----2-Methylnaphthalene	10.	U
77-47-4-----Hexachlorocyclopentadiene	10.	U
88-06-2-----2,4,6-Trichlorophenol	10.	U
95-95-4-----2,4,5-Trichlorophenol	50.	U
91-58-7-----2-Chloronaphthalene	10.	U
88-74-4-----2-Nitroaniline	50.	U
131-11-3-----Dimethylphthalate	10.	U
208-96-8-----Acenaphthylene	10.	U
606-20-2-----2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-16

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00019

Matrix: (soil/water) WATER

Lab Sample ID: 3470.7

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2703

Level: (low/med) LOW

Date Received: 5/14/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/17/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/18/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

99-09-2-----3-Nitroaniline	50.	U
83-32-9-----Acenaphthene	10.	U
51-28-5-----2,4-Dinitrophenol	50.	U
100-02-7-----4-Nitrophenol	50.	U
132-64-9-----Dibenzofuran	10.	U
121-14-2-----2,4-Dinitrotoluene	10.	U
84-66-2-----Diethylphthalate	10.	U
7005-72-3-----4-Chlorophenyl-phenylether	10.	U
86-73-7-----Fluorene	10.	U
100-01-6-----4-Nitroaniline	50.	U
534-52-1-----4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----N-Nitrosodiphenylamine	10.	U
101-55-3-----4-Bromophenyl-phenylether	10.	U
118-74-1-----Hexachlorobenzene	10.	U
87-86-5-----Pentachlorophenol	50.	U
85-01-8-----Phenanthrene	10.	U
120-12-7-----Anthracene	10.	U
84-74-2-----Di-n-butylphthalate	10.	U
206-44-0-----Fluoranthene	10.	U
129-00-0-----Pyrene	10.	U
85-68-7-----Butylbenzylphthalate	10.	U
91-94-1-----3,3'-Dichlorobenzidine	20.	U
56-55-3-----Benzo(a)anthracene	10.	U
218-01-9-----Chrysene	10.	U
117-81-7-----bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----Di-n-octylphthalate	10.	U
205-99-2-----Benzo(b)fluoranthene	10.	U
207-08-9-----Benzo(k)fluoranthene	10.	U
50-32-8-----Benzo(a)pyrene	10.	U
193-39-5-----Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----Dibenzo(a,h)anthracene	10.	U
191-24-2-----Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine



1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

FPA SAMPLE NO.

S1-16

00020

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3470.7

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2703

Level: (low/med) LOW

Date Received: 5/14/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/17/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/18/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found: 2

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN <i>R*</i>	7.38	20.	J
2.	<del>Tetrachloroethene</del> <i>R**</i>	<del>6.8</del>		
3.				
4.				
5.	* blank contaminant			
6.	** VOA target compound - reported in that fraction			
7.				
8.				
9.				
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

1 SAMPLE NO.

Lab Name: PACE

Contract:

S1-16FB  
17049

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3471.5

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2707

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/17/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/19/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

108-95-2-----Phenol	10.	U
111-44-4-----bis(2-Chloroethyl)ether	10.	U
95-57-8-----2-Chlorophenol	10.	U
541-73-1-----1,3-Dichlorobenzene	10.	U
106-46-7-----1,4-Dichlorobenzene	10.	U
100-51-6-----Benzyl alcohol	10.	U
95-50-1-----1,2-Dichlorobenzene	10.	U
95-48-7-----2-Methylphenol	10.	U
108-60-1-----bis(2-Chloroisopropyl)ether	10.	U
106-44-5-----4-Methylphenol	10.	U
621-64-7-----N-Nitroso-di-n-propylamine	10.	U
67-72-1-----Hexachloroethane	10.	U
98-95-3-----Nitrobenzene	10.	U
78-59-1-----Isophorone	10.	U
88-75-5-----2-Nitrophenol	10.	U
105-67-9-----2,4-Dimethylphenol	10.	U
65-85-0-----Benzoic acid	50.	U
111-91-1-----bis(2-Chloroethoxy)methane	10.	U
120-83-2-----2,4-Dichlorophenol	10.	U
120-82-1-----1,2,4-Trichlorobenzene	10.	U
91-20-3-----Naphthalene	10.	U
106-47-8-----4-Chloroaniline	10.	U
87-68-3-----Hexachlorobutadiene	10.	U
59-50-7-----4-Chloro-3-methylphenol	10.	U
91-57-6-----2-Methylnaphthalene	10.	U
77-47-4-----Hexachlorocyclopentadiene	10.	U
88-06-2-----2,4,6-Trichlorophenol	10.	U
95-95-4-----2,4,5-Trichlorophenol	50.	U
91-58-7-----2-Chloronaphthalene	10.	U
88-74-4-----2-Nitroaniline	50.	U
131-11-3-----Dimethylphthalate	10.	U
208-96-8-----Acenaphthylene	10.	U
606-20-2-----2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-16FB

00027

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

matrix: (soil/water) WATER

Lab Sample ID: 3471.5

sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2707

Level: (low/med) LOW

Date Received: 5/14/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/17/91

extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/19/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

99-09-2-----	3-Nitroaniline	50.	U
83-32-9-----	Acenaphthene	10.	U
51-28-5-----	2,4-Dinitrophenol	50.	U
100-02-7-----	4-Nitrophenol	50.	U
132-64-9-----	Dibenzofuran	10.	U
121-14-2-----	2,4-Dinitrotoluene	10.	U
84-66-2-----	Diethylphthalate	10.	U
7005-72-3-----	4-Chlorophenyl-phenylether	10.	U
86-73-7-----	Fluorene	10.	U
100-01-6-----	4-Nitroaniline	50.	U
534-52-1-----	4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----	N-Nitrosodiphenylamine	10.	U
101-55-3-----	4-Bromophenyl-phenylether	10.	U
118-74-1-----	Hexachlorobenzene	10.	U
87-86-5-----	Pentachlorophenol	50.	U
85-01-8-----	Phenanthrene	10.	U
120-12-7-----	Anthracene	10.	U
84-74-2-----	Di-n-butylphthalate	10.	U
206-44-0-----	Fluoranthene	10.	U
129-00-0-----	Pyrene	10.	U
85-68-7-----	Butylbenzylphthalate	10.	U
91-94-1-----	3,3'-Dichlorobenzidine	20.	U
56-55-3-----	Benzo(a)anthracene	10.	U
218-01-9-----	Chrysene	10.	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	63.	
117-84-0-----	Di-n-octylphthalate	10.	U
205-99-2-----	Benzo(b)fluoranthene	10.	U
207-08-9-----	Benzo(k)fluoranthene	10.	U
50-32-8-----	Benzo(a)pyrene	10.	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----	Dibenzo(a,h)anthracene	10.	U
191-24-2-----	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-16FB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3471.5

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2707

Level: (low/med) LOW

Date Received: 5/14/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/17/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/19/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN <i>R*</i>	7.38	20.	J
2.				
3.				
4.	*blank contaminant			
5.	<i>CCE</i>			
6.	<i>7/5/91</i>			
7.				
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DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

PESTICIDES/PCBS ANALYSES DATA

Samples Collected 05/13/91

Chemical Analyses Performed By

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

No target compound list (TCL) compounds were detected in the pesticide/PCB fraction.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the quantitation limit or the detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

**Data Validation for  
Environmental Project Control, Inc.**

Samples Collected May 13, 1991

**Pesticide/PCB Analyses Data**

**Case Narrative**

Three treatment system samples were collected May 13, 1991 and submitted to Pace, Inc. May 14, 1991. The laboratory was requested to perform pesticide/PCB target compound list (TCL) analyses.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  range may adversely affect the more volatile compounds.

No TCL compounds were detected in the pesticide/PCB fraction.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3470	S1-16	05/13/91
3471	S1-16FB	05/13/91
3479	S6-16	05/13/91

The areas reviewed during validation are listed below.

## ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment of Data for a Case



## DATA VALIDATION

### I. Sample Holding Times

All samples were extracted and analyzed within holding times.

### II. Instrument Performance

DDT retention time was greater than or equal to 12 minutes.

Retention time windows were reported on Form IX for each column used.

Retention times and calibration factors were accurately recorded on Form IX.

DDT/Endrin degradation was less than 20%.

DBC retention time met the 1.5% criteria for wide-bore capillary columns on the DB-5 and DB-608 columns.

### III. Calibration

#### Initial Calibration Linearity Check Inst V63400 06/03-05/91

The DB608 column used for quantitation met the 10% relative standard deviation (%RSD) criteria. The DB5 column used for confirmation failed to meet the %RSD criteria for the following compounds:

aldrin (19%)  
endrin (26%)  
4,4'-DDT (15%)

These compound were not detected and no data have been qualified.

#### Analytical Run Sequence

All standards were run within 72 hours.

#### Continuing Calibration

The column used for quantitation met the 15% D criteria.

The column used for confirmation met the 20% D criteria.

#### **IV. Blanks**

No TCL compounds were detected in BLKW17.

#### **V. Surrogate Recovery**

Surrogate recoveries were acceptable.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

Matrix spike recoveries for the following compounds were outside the established advisory limits:

gamma-BHC (23%)  
dieldrin (40%)  
endrin (45%)

Matrix spike duplicate recoveries for the following compounds were outside established advisory limits:

gamma-BHC (29%)  
dieldrin (50%)  
endrin (54%)

These compounds were not detected in the unspiked sample and no data were qualified.

Gamma-BHC, heptachlor and endrin failed to meet RPD criteria. These compounds were not detected in the unspiked sample and no data have been qualified.

#### **VII. Field Quality Control Samples**

S1-16FB is a field blank. No TCL compounds were detected.

#### **VIII. Internal Standards Performance**

Standard performance based on the retention time windows was acceptable.

#### **IX. TCL Compound Identification**

No target compounds were detected.

**X. Compound Quantitation and Reported Detection Limits**

Detection limit quantifications were acceptable with regard to supporting data.

**XI. Tentatively Identified Compounds**

Not Applicable.

**XII. System Performance**

System performance was acceptable.

**XIII. Overall Assessment of Data for a Case**

No TCL compounds were detected.

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

1 SAMPLE NO.

Lab Name: PACE

Contract: EPC

S1-16

00017

Lab Code: PACE

Case No.:

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3470.7

Sample wt/vol: 1000. (g/mL)ML

Lab File ID: V66597

Level: (low/med) LOW

Date Received: 5/14/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/17/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 4/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	.050	U
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	.10	U
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	.10	U
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

Lab Name: PACE

Contract: EPC

S1-16FB

00023

Lab Code: PACE

Case No.:

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3471.5

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66601

Level: (low/med) LOW

Date Received: 5/14/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/17/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 4/91

PC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

319-84-6-----Alpha-BHC	.050	U
319-85-7-----Beta-BHC	.050	U
319-86-8-----Delta-BHC	.050	U
58-89-9-----Gamma-BHC	.050	U
76-44-8-----Heptachlor	.050	U
309-00-2-----Aldrin	.050	U
1024-57-3-----Heptachlor Epoxide	.050	U
959-98-8-----Endosulfan I	.050	U
60-57-1-----Dieldrin	.10	U
72-55-9-----4,4'-DDE	.10	U
72-20-8-----Endrin	.10	U
33213-65-9-----Endosulfan II	.10	U
72-54-8-----4,4'-DDD	.10	U
1031-07-8-----Endosulfan Sulfate	.10	U
50-29-3-----4,4'-DDT	.10	U
72-43-5-----Methoxychlor	.50	U
53494-70-5-----Endrin Ketone	.10	U
5103-71-9-----alpha-Chlordane	.50	U
5103-74-2-----gamma-Chlordane	.50	U
8001-35-2-----Toxaphene	1.0	U
12674-11-2-----Arochlor-1016	.50	U
11104-28-2-----Arochlor-1221	.50	U
11141-16-5-----Arochlor-1232	.50	U
53469-21-9-----Arochlor-1242	.50	U
12672-29-6-----Arochlor-1248	.50	U
11097-69-1-----Arochlor-1254	1.0	U
11096-82-5-----Arochlor-1260	1.0	U

1D  
PEST \_IDE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

560629

Name: PACE Contract: EPC  
 Lab Code: PACE Case No.: SAS No.: SDG No.:  
 Matrix: (soil/water) WATER Lab Sample ID: 3479.0  
 Sample wt/vol: 1000. (g/mL)ML Lab File ID: V66604  
 Level: (low/med) LOW Date Received: 5/14/91  
 Moisture: not dec.100. dec. 0. Date Extracted: 5/17/91  
 Extraction: (SepF/Cont/Song) SEPF Date Analyzed: 6/ 4/91  
 Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	.050	U
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	.10	U
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	.10	U
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
INORGANIC ANALYSES DATA

Samples Collected 5/13/91, 5/14/91, & 5/19/91

Chemical Analyses Performed By  
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Metals analytical data presented for this sample delivery group were fair. Much of the data was qualified as estimated. In addition, several positive sample results were rejected due to blank contamination. All unqualified positive sample data may be used without reservation.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).



UJ - The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

# Inorganic Data Validation

for

Environmental Project Control, Inc.

Samples Collected 5/13/91, 5/14/91 & 5/19/91

## Case Narrative

This group contained sixteen water samples including five field blanks to be analyzed for total metals and cyanide.

Samples validated in this report are noted below:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-16	3470	5/13/91
S1-16FB	3471	5/13/91
S1A-14 (1)	3473	5/13/91
S6-16	3479	5/13/91
V140M5 (2)	3521	5/14/91
V131M5 (2)	3522	5/14/91
V131M5FB (2)	3523	5/14/91
V140C5 (3)	3524	5/14/91
V131C5 (3)	3525	5/14/91
V131C5FB (3)	3527	5/14/91
V131M10 (2)	3714	5/19/91
V140M10 (2)	3713	5/19/91
V140M10FB (2)	3716	5/19/91
V140C10 (3)	3701	5/19/91
V131C10 (3)	3702	5/19/91
V131C10FB (3)	3704	5/19/91

- (1) Iron and manganese only
- (2) Metals only
- (3) Cyanide only

The areas reviewed during validation are listed below.

### CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
- IX. ICP Serial Dilution Analysis
- X. Detection Limits
- XI. Sample Result Verification
- XII. Other QC
- XIII. Overall Assessment

## Data Validation

### I. Holding Times

All metals analyses were conducted within acceptable holding times.

Cyanide analyses were conducted within acceptable holding times.

### II. Calibration

Calibrations for metals were satisfactory.

One of the standards analyzed to establish the calibration curve for AA must be at the CRDL. The CRDL for antimony is 60 ppb, and the highest standard analyzed was 45 ppb. Since antimony was not detected in any sample, data quality was not affected.

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within  $\pm 20\%$  of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for chromimun and silver were estimated.

Cyanide calibration was acceptable.

### III. Blanks

No preparation or calibration blanks were above the CRDLs or less than the negative CRDLs.

Continuing calibration blank for antimony (-0.5 ppb) was less than the negative IDL.

Field blank S1-16FB contained copper (7.0 ppb), iron (133 ppb), lead (0.90 ppb), and zinc (29 ppb). Field blank V131M5 contained cadmium (0.1 ppb), lead (0.9 ppb), and zinc (36 ppb). Field blank V140M10FB contained copper (6.0 ppb), lead (0.5 ppb), sodium (451 ppb), and zinc (18 ppb). Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value where appropriate.

Because of the negative blank values reported for antimony, detection limits were raised to 1.3 U.

#### IV. ICP Interference Check Sample

Interference check sample results were satisfactory.

#### V. Matrix Spike Sample Analysis

Spike recoveries not meeting criteria are summarized below.

Sample	Analyte	Recovery (%)
S1-16	Arsenic	70.5
	Barium	9.2
	Silver	28.0
V131M5	Arsenic	66.2
	Barium	9.6
	Selenium	73.0
	Silver	52.0
V131M10	Arsenic	73.8
	Barium	10.4
	Chromium	131.0
	Iron	125.2
	Silver	52.0

Positive results and detection limits for arsenic, barium, and silver were estimated (J). Detection limits for barium were rejected (R). Positive chromium and iron results for samples associated with V131M10, and selenium detection limits for samples associated with V131M5 were estimated (UJ).

Cyanide spike results were acceptable.

#### VI. Duplicate Sample Analysis

Duplicate analyses results for metals were satisfactory.

Cyanide duplicate results were acceptable.

#### VII. Laboratory Control Sample Analyses

Laboratory control sample results were satisfactory.

#### **VIII. Furnace Atomic Absorption Analysis**

Duplicate injections were performed for all samples and agreed within  $\pm 20\%$ .

The method of standard additions was not required.

#### **IX. ICP Serial Dilution Analysis**

Serial dilutions were conducted on S1-11. All results met the validation criteria of 15%.

#### **X. Detection Limits**

Instrument detection limits (IDLs) should be less than the contract required detection limits (CRDLs). The IDL reported for mercury is equal to its CRDL. Mercury was not detected in any of the samples, so no data were qualified.

#### **XI. Sample Result Verification**

Sample results were acceptable as reported.

#### **XII. Other QC**

Samples were not analyzed for total and dissolved metals. Therefore, no additional QC was available.

#### **XIII. Overall Assessment**

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. Positive results and detection limits for chromimun and silver were estimated.

Continuing calibration blank for antimony ( $-0.5$  ppb) was less than the negative IDL.

Field blank S1-16FB contained copper, iron, lead, and zinc. Field blank V131M5 contained cadmium, lead, and zinc. Field blank V140M10FB contained copper, lead, sodium, and zinc.

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value where appropriate.

Because of the negative blank values reported for antimony, detection limits were raised to 1.3 U.

Because of spike recoveries, positive results and detection limits for arsenic, barium, and silver were estimated (J). Detection limits for barium were rejected (R). Positive chromium and iron results for samples associated with V131M10 and selenium detection limits for samples associated with V131M5 were estimated (UJ).

## INORGANIC ANALYSES DATA SHEET

00033

S1-16

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 3470.7

Level (low/med): LOW

Date Received: 05/14/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U	NJ	F
7440-39-3	Barium	17.0	B	NJ	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	87800			P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	8.0	B	u	P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	0.90	B	WU	F
7439-95-4	Magnesium	10300			P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	2640	B		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	11.0		NJ	P
7440-23-5	Sodium	78100			P
7440-28-0	Thallium	0.70	U	W	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	115		u	P
	Cyanide	10	U		AS

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Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:



## U.S. EPA - CLP

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## INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00034

S1-16FB

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 3471.5

Level (low/med): LOW

Date Received: 05/14/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U	J	F
7440-39-3	Barium	12.5	U	R	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	448	U		P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	7.0	B		P
7439-89-6	Iron	133	B		P
7439-92-1	Lead	0.90	B		F
7439-95-4	Magnesium	509	U		P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	760	U		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	J	P
7440-23-5	Sodium	390	U		P
7440-28-0	Thallium	0.70	U	W	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	29.0	U		P
	Cyanide	10	U		AS

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Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00035

S1A-14

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER Lab Sample ID: 3473.1

Level (low/med): LOW Date Received: 05/14/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

## INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00036

S6-16

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 3479.0

Level (low/med): LOW

Date Received: 05/14/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U	WJ	F
7440-39-3	Barium	19.0	B	NJ	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	93800			P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	8.0	B	U	P
7439-89-6	Iron	216		U	P
7439-92-1	Lead	2.1	B	WU	F
7439-95-4	Magnesium	10800			P
7439-96-5	Manganese	3.0	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	2930	B		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	10		NJ	P
7440-23-5	Sodium	83100			P
7440-28-0	Thallium	0.70	U	W	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	139		U	P
	Cyanide	10	U		AS

7/17/91

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

## INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

00037

V140M5

Lab Name: PACE\_INCORPORATED

Contract: EPC

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: \_\_\_\_\_

Matrix (soil/water): WATER

Lab Sample ID: 3521.5

Level (low/med): LOW

Date Received: 05/15/91

Solids: \_\_\_\_\_

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.5	B	WNJ	F
7440-39-3	Barium	29.0	B	NJ	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	0.20	B	U	F
7440-70-2	Calcium	48300	U		P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	8.0	B		P
7439-89-6	Iron	882	U		P
7439-92-1	Lead	2.3	B	U	F
7439-95-4	Magnesium	10300	U		P
7439-96-5	Manganese	1350	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	6980	U		P
7782-49-2	Selenium	0.50	U	NJ	F
7440-22-4	Silver	8.1	U	NJ	P
7440-23-5	Sodium	30200	U		P
7440-28-0	Thallium	0.70	U	W	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	23.0	U	U	P
	Cyanide				NR

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Color Before: COLORLESS

Clarity Before: CLEAR

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR

Artifacts: \_\_\_\_\_

Comments:

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1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00038

V131M5

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 3522.3

Level (low/med): LOW

Date Received: 05/15/91

\* Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.5	B	NJ	F
7440-39-3	Barium	29.0	B	NJ	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	0.12	B	U	F
7440-70-2	Calcium	47600			P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	965			P
7439-92-1	Lead	0.50	U		F
7439-95-4	Magnesium	10200			P
7439-96-5	Manganese	1300			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	6490			P
7782-49-2	Selenium	0.50	U	NJ	F
7440-22-4	Silver	8.1	U	NJ	P
7440-23-5	Sodium	28700			P
7440-28-0	Thallium	0.70	U	W	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	26.0		U	P
	Cyanide				NR

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Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00039

v131 M5 FB

Lab Name: PACE\_INCORPORATED

Contract: EPC

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: \_\_\_\_\_

Matrix (soil/water): WATER

Lab Sample ID: 3523.1

Level (low/med): LOW

Date Received: 05/15/91

Solids: \_\_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U	J	F
7440-39-3	Barium	12.5	U	R	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	0.10	B		F
7440-70-2	Calcium	448	U		P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	0.90	B		F
7439-95-4	Magnesium	509	U		P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	760	U		P
7782-49-2	Selenium	0.50	U	J	F
7440-22-4	Silver	8.1	U	J	P
7440-23-5	Sodium	390	U		P
7440-28-0	Thallium	0.70	U		F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	36.0			P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR

Artifacts: \_\_\_\_\_

Comments:

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## U.S. EPA - CLP

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## INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

00040

V140C5

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER Lab Sample ID: 3524.0

Level (low/med): LOW Date Received: 05/15/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide	10	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00041 V131C5

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 3525.8

Level (low/med): LOW

Date Received: 05/15/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide	10	U		AS

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:



1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00042 ✓/31 C5 FB

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER Lab Sample ID: 3527.4

Level (low/med): LOW Date Received: 05/15/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide	10	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

## INORGANIC ANALYSES DATA SHEET

00043

V131M10

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER Lab Sample ID: 3714.5

Level (low/med): LOW Date Received: 05/19/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U	NJ	F
7440-39-3	Barium	29.0	B	NJ	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	0.15	B		F
7440-70-2	Calcium	44200		B	P
7440-47-3	Chromium	9.5	U	NJ	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	7.0	B	U	P
7439-89-6	Iron	208		NJ	P
7439-92-1	Lead	0.80	B	U	F
7439-95-4	Magnesium	9190			P
7439-96-5	Manganese	959		B	P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	7140			P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	NJ	P
7440-23-5	Sodium	30500			P
7440-28-0	Thallium	0.70	U	N	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	22.0		U	P
	Cyanide				NR

pen  
7/17/91

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

1  
INORGANIC ANALYSES DATA SHEET

E SAMPLE NO.

00044

V140M10

Lab Name: PACE INCORPORATED

Contract: EPC

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: \_\_\_\_\_

Matrix (soil/water): WATER

Lab Sample ID: 3713.7

Level (low/med): LOW

Date Received: 05/19/91

Solids: \_\_\_\_\_

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	B	WNS	F
7440-39-3	Barium	28.0	B	NJ	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	0.16	B		F
7440-70-2	Calcium	44400		E	P
7440-47-3	Chromium	9.5	U	NJ	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	10	B	U	P
7439-89-6	Iron	229		NJ	P
7439-92-1	Lead	0.50	U		F
7439-95-4	Magnesium	9630			P
7439-96-5	Manganese	960		E	P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	7030			P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	NJ	P
7440-23-5	Sodium	28600			P
7440-28-0	Thallium	0.70	U	W	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	23.0		U	P
	Cyanide				NR

*pen*  
7/17/91

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR

Artifacts: \_\_\_\_\_

Comments:

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00045

✓140 M10 FB

Lab Name: PACE\_INCORPORATED\_\_\_\_\_

Contract: EPC\_\_\_\_\_

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: \_\_\_\_\_

Matrix (soil/water): WATER

Lab Sample ID: 3716.1\_\_\_\_\_

Level (low/med): LOW\_\_

Date Received: 05/19/91

\* Solids: \_\_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U	J	F
7440-39-3	Barium	12.5	U	R	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	0.080	U		F
7440-70-2	Calcium	448	U		P
7440-47-3	Chromium	9.5	U	J	P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	6.0	B		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	0.50	B		F
7439-95-4	Magnesium	509	U		P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	760	U		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U	J	P
7440-23-5	Sodium	451	B		P
7440-28-0	Thallium	0.70	U		F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	18.0	B		P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR\_

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR\_

Artifacts: \_\_\_\_\_

Comments:

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00046

V140C10

Lab Name: PACE\_INCORPORATED\_\_\_\_\_

Contract: EPC\_\_\_\_\_

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: \_\_\_\_\_

Matrix (soil/water): WATER

Lab Sample ID: 3701.3\_\_\_\_\_

Level (low/med): LOW\_\_\_\_\_

Date Received: 05/19/91

Solids: \_\_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_\_\_\_\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide	10	U		AS

Color Before: COLORLESS

Clarity Before: CLEAR\_\_\_\_\_

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR\_\_\_\_\_

Artifacts: \_\_\_\_\_

Comments:

## INORGANIC ANALYSES DATA SHEET

Lab Name: PACE\_INCORPORATED\_\_\_\_\_

Contract: EPC\_\_\_\_\_

00047

V131C10

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: \_\_\_\_\_

Matrix (soil/water): WATER

Lab Sample ID: 3702.1\_\_\_\_\_

Level (low/med): LOW\_\_\_\_\_

Date Received: 05/19/91

Solids: \_\_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide	10	U		AS

Color Before: COLORLESS

Clarity Before: CLEAR\_

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR\_

Artifacts: \_\_\_\_\_

Comments:

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE\_INCORPORATED

Contract: EPC

00048

V131 C10 FB

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: \_\_\_\_\_

Matrix (soil/water): WATER

Lab Sample ID: 3704.8

Level (low/med): LOW

Date Received: 05/19/91

Solids: \_\_\_\_\_

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide	10	U		AS

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR

Artifacts: \_\_\_\_\_

Comments:



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/14/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233



## EXECUTIVE SUMMARY

Tetrachloroethene was the only compound detected in Unifirst samples and vinyl chloride, total 1,2-dichloroethene, and trichloroethene were the only compounds detected in Grace samples. No tentatively identified compounds (TICs) were detected.

As noted on the chain of custody, the temperature of the Grace samples was not taken. UniFirst samples were 18<sup>o</sup> C when received in the laboratory. Temperatures outside the 4<sup>o</sup>C +2<sup>o</sup>C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Eight treatment system samples were collected (both Unifirst and Grace) and submitted for analysis to PACE, Inc. on May 14, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses. V131V5FS was used for the field duplicate, matrix spike, and matrix spike duplicate.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-17	3497	05/14/91
S1-17TB	3498	05/14/91
S1-17FB	3499	05/14/91
S4-15	3503	05/14/91
V131V5FS	3509	05/14/91
V131V5TB	3510	05/14/91
V154V5FS	3512	05/14/91
V197V5FS	3511	05/14/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

### I. Holding Times

All sample analysis met holding times.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met with the exception of 2-butanone which had an average RRF of 0.030 and %RSD of 39.8. Detection limits for 2-butanone were rejected in all samples.

#### B. Continuing

Continuing calibration criteria not met are summarized below.

Date	Time	Compound	RF	%D
5/20	1:47	2-butanone	0.032 (0.1)	
		Bromomethane		32.9 (25)
		Methylene Chloride		26.5 (25)
		Benzene		26.7 (25)
5/20	14:24	2-Butanone	0.024 (0.1)	28.3 (25)
		Bromoform		29.1 (25)
5/21	7:54	2-Butanone	0.014 (0.1)	56.1 (25)

#### ( ) Acceptance criteria

Detection limits for 2-butanone were rejected. All other data were not affected.

#### **IV. Blanks**

Acetone was detected in V131V5TB at 2 ppb.

#### **V. Surrogate Recovery**

All surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.

#### **VII. Field Duplicates**

Vinyl chloride was detected in the sample at 440 ppb, the field duplicate at 400 ppb, in the MS at 510 ppb, and in the MSD at 480 ppb (%RSD 10). Total 1,2-dichloroethene was detected in the sample at 1200 ppb, the field duplicate at 1000 ppb, in the MS at 1000 ppb, and in the MSD at 990 ppb (%RSD 9.7). Trichloroethene was detected in the sample at 440 ppb and in the field duplicate at 400 ppb. The data were acceptable.

#### **VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

#### **IX. TCL Compound Identification**

Target compounds were properly identified.

#### **X. Compound Quantitation and Reported Detection Limits**

Detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were detected.

### **XII. System Performance**

System performance requires attention. Manual integrations should be addressed. Respons factor criteria should be monitored by the laboratory.

### **XIII. Overall Assessment of Data for a Case**

All 2-butanone detection limits were rejected because of the low RF.

## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

51-17

00021

Lab Name: FACE

Contract:

Lab Code: FACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3497.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62990

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

## CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/kg) UG/L

Q

74-87-3	-----Chloromethane	200.	U
74-83-9	-----Bromomethane	200.	U
75-01-4	-----Vinyl Chloride	200.	U
75-00-3	-----Chloroethane	200.	U
75-09-2	-----Methylene Chloride	100.	U
67-64-1	-----Acetone	200.	U
75-15-0	-----Carbon Disulfide	100.	U
75-35-4	-----1,1-Dichloroethene	100.	U
75-34-3	-----1,1-Dichloroethane	100.	U
540-59-0	-----1,2-Dichloroethene (total)	100.	U
67-66-3	-----Chloroform	100.	U
107-06-2	-----1,2-Dichloroethane	100.	U
78-93-3	-----2-Butanone	200.	U
71-55-6	-----1,1,1-Trichloroethane	100.	U
56-23-5	-----Carbon Tetrachloride	100.	U
108-05-4	-----Vinyl Acetate	200.	U
75-27-4	-----Bromodichloromethane	100.	U
78-87-5	-----1,2-Dichloropropane	100.	U
10061-01-5	-----cis-1,3-Dichloropropene	100.	U
79-01-6	-----Trichloroethene	100.	U
124-48-1	-----Dibromochloromethane	100.	U
79-00-5	-----1,1,2-Trichloroethane	100.	U
71-43-2	-----Benzene	100.	U
10061-02-6	-----Trans-1,3-Dichloropropene	100.	U
75-25-2	-----Bromoform	100.	U
108-10-1	-----4-Methyl-2-Pentanone	200.	U
591-78-6	-----2-Hexanone	200.	U
127-18-4	-----Tetrachloroethene	3100.	
79-34-5	-----1,1,2,2-Tetrachloroethane	100.	U
108-88-3	-----Toluene	100.	U
108-90-7	-----Chlorobenzene	100.	U
100-41-4	-----Ethylbenzene	100.	U
100-42-5	-----Styrene	100.	U
1330-20-7	-----Xylene (total)	100.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

1-17

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00022

Matrix: (soil/water) WATER

Lab Sample ID: 3497.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62990

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				



## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-17FB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00027

Matrix: (soil/water) WATER

Lab Sample ID: 3499.5

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62991

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	D
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

VOLEATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

1-17FB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00028

Matrix: (soil/water) WATER

Lab Sample ID: 3499.5

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62991

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA 821/6-89-010

Lab Name: PACE

Contract:

S1-17TB

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00032

Matrix: (soil/water) WATER

Lab Sample ID: 3498.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62978

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

## CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/kg) UG/L

Q

74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	5.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

TENTATIVELY IDENTIFIED COMPOUNDS

01-17TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00033

Matrix: (soil/water) WATER

Lab Sample ID: 3498.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62978

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACE

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

54-15

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00037

Matrix: (soil/water) WATER

Lab Sample ID: 3503.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63004

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	UG/L
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	100.	U
75-00-3	Chloroethane	100.	U
75-09-2	Methylene Chloride	50.	U
67-64-1	Acetone	100.	U
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	50.	U
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethene (total)	50.	U
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	50.	U
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	50.	U
10061-02-6	Trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachloroethene	1400.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	50.	U
108-90-7	Chlorobenzene	50.	U
100-41-4	Ethylbenzene	50.	U
100-42-5	Styrene	50.	U
1330-20-7	Xylene (total)	50.	U

FOOTPRINT ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

4-15

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00038

Matrix: (soil/water) WATER

Lab Sample ID: 3503.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63004

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

(ug/L or ug/kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

V131V5FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00119

Matrix: (soil/water) WATER

Lab Sample ID: 3509.6 -

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62993

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACT

Dilution Factor: 10.00

## CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/L

Q

74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	570.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1200.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	<del>100.</del>	<del>U</del> R
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	440.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

131V5FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3500-120

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62993

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131V5F5 DuP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00127

Matrix: (soil/water) WATER

Lab Sample ID: 3509.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63012

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) US/L	U
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	520.	
75-00-3	Chloroethane	100.	U
75-09-2	Methylene Chloride	50.	U
67-64-1	Acetone	100.	U
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	50.	U
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethene (total)	1000.	
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U R
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	400.	
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	50.	U
10061-02-6	Trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachloroethene	50.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	50.	U
108-90-7	Chlorobenzene	50.	U
100-41-4	Ethylbenzene	50.	U
100-42-5	Styrene	50.	U
1330-20-7	Xylene (total)	50.	U

TENTATIVELY IDENTIFIED COMPOUNDS

131V5FS Dup

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3509.6

00128

sample wt/vol: 5. (g/mL) ML

Lab File ID: 63012

level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131V5TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 35100135

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62996

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	2.	J
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	NR
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

## TENTATIVELY IDENTIFIED COMPOUNDS

131V5TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3510.0

00136

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62996

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

## CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

FORM SAMPLE NO.

V154V5FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3512.6

00141

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62398

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pac1/cad) PAC1

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-Chloromethane	50.	U
74-83-9	-Bromomethane	50.	U
75-01-4	-Vinyl Chloride	50.	U
75-00-3	-Chloroethane	50.	U
75-09-2	-Methylene Chloride	25.	U
67-64-1	-Acetone	50.	U
75-15-0	-Carbon Disulfide	25.	U
75-35-4	-1,1-Dichloroethene	25.	U
75-34-3	-1,1-Dichloroethane	25.	U
540-59-0	-1,2-Dichloroethene (total)	450.	U
67-66-3	-Chloroform	25.	U
107-06-2	-1,2-Dichloroethane	25.	U
78-93-3	-2-Butanone	25.	U
71-55-6	-1,1,1-Trichloroethane	25.	U
56-23-5	-Carbon Tetrachloride	50.	U
108-05-4	-Vinyl Acetate	25.	U
75-27-4	-Bromodichloromethane	25.	U
78-87-5	-1,2-Dichloropropane	25.	U
10061-01-5	-cis-1,3-Dichloropropene	25.	U
79-01-6	-Trichloroethene	440.	U
124-48-1	-Dibromochloromethane	25.	U
79-00-5	-1,1,2-Trichloroethane	25.	U
71-43-2	-Benzene	25.	U
10061-02-6	-Trans-1,3-Dichloropropene	25.	U
75-25-2	-Bromoform	25.	U
108-10-1	-4-Methyl-2-Pentanone	50.	U
591-78-6	-2-Hexanone	50.	U
127-18-4	-Tetrachloroethene	25.	U
79-34-5	-1,1,2,2-Tetrachloroethane	25.	U
108-88-3	-Toluene	25.	U
108-90-7	-Chlorobenzene	25.	U
100-41-4	-Ethylbenzene	25.	U
100-42-5	-Styrene	25.	U
1330-20-7	-Xylene(total)	25.	U

VOA-TOC ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

154V5FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 35100142

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2998

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V197V5FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3511.8 00148

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62997

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	1300.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1600.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U R
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	87.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

ALL ORGANIC ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

197V5FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 351008149

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62997

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				





DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEMS  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/14/91

Chemical Analyses Performed By  
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

All positive results and detection limits, except for Samples V140V5FB and S6-17MSD were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds in the standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

Cooler temperature upon receipt of W.R. Grace samples by the laboratory was not recorded; cooler temperature for the UniFirst samples was 18°C. Temperatures outside the 4°C  $\pm$  2°C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Five samples were collected and submitted to PACE, Inc. on May 14, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S5-12	3504	05/14/91
S6-17	3506	05/14/91
S6-17TB	3505	05/14/91
V140V5FS	3508	05/14/91
V140V5FB	3507	05/14/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

Samples from the W.R. Grace treatment plant were preserved with HCl. Holding times were met for all W.R. Grace samples.

Samples from the UniFirst treatment plant were apparently not preserved. All UniFirst samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all UniFirst samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Peaks were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data, except for Samples V140V5FB and S6-17MSD, for this sample delivery group has been qualified as estimated.

### **A. Initial**

Initial calibration criteria were met on 5/16/91 and 5/23/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/23/91 and 5/25/91.

## **IV. Blanks**

The trip blank, field blank, and method blanks were clean.

## **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria with the exception of toluene d-8 in Sample S6-17MS (actual 111; criteria 110). Data were not qualified.

## VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-17. The percent recoveries and relative percent difference for 1,1-dichloroethene were below QC criteria in the MS and MSD. No positive results for this compound were detected, so no data were qualified.

The laboratory quantified the spiking compounds using the average relative response factor from the initial calibration rather than the response factor for the continuing calibration. The results discussed in the preceding paragraph pertain to correctly quantified values.

## VII. Field Duplicates

Samples S6-17 and S6-17DUP were submitted as duplicate samples. However, the laboratory apparently did not run Sample S6-17DUP. Clarification has been requested from the laboratory.

## VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

TCL compound identifications were acceptable.

## X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53

<u>Compound</u>	<u>MDL (ug/L)</u>
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Compounds reported in Sample S5-12 were quantified using the relative response factor from the initial calibration rather than the response factor from the continuing calibration. Correct results are listed below.

<u>Compound</u>	<u>Concentration (ug/L)</u>
1,1-Dichloroethene	0.94
1,1-Dichloroethane	2.2
1,1,1-Trichloroethane	19

Spiking compound concentrations were also quantified incorrectly, as discussed in Section VI.

The result for methylene chloride in Sample S5-12 was below the MDL determined by the PQL study for this project. This result was corrected to "ND."

All other results and detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were reported for this sample delivery group.

## **XII. System Performance**

System performance was acceptable.

## **XIII. Overall Assessment of Data for a Case**

All positive results and detection limits for this sample delivery group, with the exception of Samples V140V5FB and S6-17MSD were qualified as estimated because of the manual integration of areas for most of the compounds.

Compound concentrations were corrected for Samples S5-12 and S6-17MS.



UNIFIRST ENSR

PACR Project Number: 810515504

00039

PACE Sample Number:

95 0035045

Date Collected:

05/14/91

Date Received:

05/15/91

ParameterUnitsMDLS5-12ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND w/ 2KJ 7/19/91
Chloroethane	ug/L	0.5	ND w/
Methylene chloride	ug/L	0.5	7.2 ND
1,1-Dichloroethene	ug/L	0.5	2.7 0.94
1,1-Dichloroethane	ug/L	0.5	2.3 2.2
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND w/
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	20 19
Carbon tetrachloride	ug/L	0.5	ND w/
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

UNIFIRST ENSR

PACR Project Number: 810515504

00047

PACE Sample Number:

95 0035053

Date Collected:

05/14/91

Date Received:

05/15/91

ParameterUnitsMDLS6-17 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	WJ EKB 7/18/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00051

UNIFIRST ENSR

PACR Project Number: 810515504

PACE Sample Number:

95 0035061

Date Collected:

05/14/91

Date Received:

05/15/91

ParameterUnitsMDLS6-17ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND	us 2x3 7/9/91
Chloroethane	ug/L	0.5	ND	
Methylene chloride	ug/L	0.5	ND	
1,1-Dichloroethene	ug/L	0.5	ND	
1,1-Dichloroethane	ug/L	0.5	ND	
trans-1,2-Dichloroethene	ug/L	0.5	ND	
cis-1,2-Dichloroethene	ug/L	0.5	ND	
Chloroform	ug/L	0.5	ND	
1,2-Dichloroethane	ug/L	0.5	ND	
1,1,1-Trichloroethane	ug/L	0.5	ND	
Carbon tetrachloride	ug/L	0.5	ND	
Bromodichloromethane	ug/L	0.5	ND	
1,2-Dichloropropane	ug/L	0.5	ND	
cis-1,3-Dichloropropene	ug/L	0.5	ND	
Trichloroethene	ug/L	0.5	ND	
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	ND	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND	

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810515505

00055

PACE Sample Number:

95 0035070

Date Collected:

05/14/91

Date Received:

05/15/91

Parameter

Units

MDL

V140 V5 FS

ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

2K5  
2/9/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810515505

00059

PACE Sample Number:

95 0035088

Date Collected:

05/14/91

Date Received:

05/15/91

ParameterUnitsMDLV140 V5 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.



DATA VALIDATION REPORT

FOR

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

SEMIVOLATILES ANALYSIS DATA  
Samples Collected May 14, 1991

Chemical Analyses Performed by:

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

No target compound list (TCL) compounds were detected in Samples V131S5FB and V140S5FS; a very low level of 1,2-dichlorobenzene was detected in both Samples V131S5FS and V131S5FD. No tentatively identified compounds were observed in any of the samples in this SDG. No qualifiers have been applied to the reported results.

Problems identified on the Chain of Custody (COC) records include: (1) 10 COC's are included although only 2 are pertinent to this data package; (2) there is no "Accepted by" signature on any but the first COC record; (3) the "Relinquished by" signature does not include the affiliation of the person involved; (4) all of the COC records are difficult to read, the copies provided are very dark; (5) the signature of the sampler at the top of the form includes only a first initial-the full name should be signed here; and (6) cold storage of the samples is not documented; and (7) separate entries should not be made for MS/MSD samples. In addition, the Case Narrative states that the samples were received at the lab on May 14, while the COC's indicate lab receipt could not have taken place before May 15.

Validation of the data package is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.



These codes are used on the accompanying Form I's copied from the data package to qualify some of the results as appropriate based on the findings of the data review.



### Case Narrative

Six water samples (including separate samples for matrix spike/matrix spike duplicate) were collected on May 14, 1991 and received by Pace, Inc. on May 15, 1991. Analysis of semivolatile organic compounds according to EPA Contract Laboratory Program (CLP) Statement of Work 2/88 was performed.

The following samples are included in this Sample Delivery Group (SDG):

<u>Client ID</u>	<u>Lab ID</u>	<u>Collection Date</u>
V140S5FS	3513	5/14/91
V131S5FS	3514	5/14/91
V131S5FD	3515	5/14/91
V131S5FB	3516	5/14/91

Semivolatiles analysis results for these samples were reported by the laboratory under Project Number 810515.505.

## Semivolatiles



The areas reviewed during the semivolatiles validation procedure are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## I. Holding Times

All samples were extracted and analyzed within the established holding times.

The COC records do not indicate that the samples were placed in cold storage in the field, at the time of collection. Cold storage is a form of preservation and must be documented, or the validator must assume it was not performed. No qualifiers are applied to the results in this case, since no otherwise unqualified positive results are reported for the samples.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria. Raw data were missing for the DFTPP run on 6/20/91, File D2737, under which all the samples in this SDG were run. This data was requested from the laboratory and has been provided; a copy is attached to this report. The abundances on the mass listing do not match those listed on the Form V for this DFTPP run, however both are within the established criteria. The difference is likely due to the use of a different scan number to generate the spectrum that was used to fill out the summary form. No data are affected.

## III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be done as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No internal standard (IS) or surrogate peaks were manually integrated; data do not appear to be affected.

### A. Initial

All samples in this SDG were analyzed under an initial calibration (IC) performed on 6/19/91. All criteria were met for this calibration with the exception of the Percent Relative Standard Deviation (%RSD) for 4-chloroaniline (37.5), 3-nitroaniline (41.4), and 3,3'-dichlorobenzidine (44.7). In addition, Response Factors (RF) could not be verified in all cases using the areas on the Quant Reports; it appeared that some manual areas were used that did not get documented in the raw data. Corrected raw data was requested from the laboratory, and has been provided; a copy is attached to this report. All RF's are verifiable using the corrected raw data.

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0V10158FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3515.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2744

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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108-95-2-----Phenol	10.	U
111-44-4-----bis(2-Chloroethyl)ether	10.	U
95-57-8-----2-Chlorophenol	10.	U
541-73-1-----1,3-Dichlorobenzene	10.	U
106-46-7-----1,4-Dichlorobenzene	10.	U
100-51-6-----Benzyl alcohol	10.	U
95-50-1-----1,2-Dichlorobenzene	1.	J
95-48-7-----2-Methylphenol	10.	U
108-60-1-----bis(2-Chloroisopropyl)ether	10.	U
106-44-5-----4-Methylphenol	10.	U
621-64-7-----N-Nitroso-di-n-propylamine	10.	U
67-72-1-----Hexachloroethane	10.	U
98-95-3-----Nitrobenzene	10.	U
78-59-1-----Isophorone	10.	U
88-75-5-----2-Nitrophenol	10.	U
105-67-9-----2,4-Dimethylphenol	10.	U
65-85-0-----Benzoic acid	50.	U
111-91-1-----bis(2-Chloroethoxy)methane	10.	U
120-83-2-----2,4-Dichlorophenol	10.	U
120-82-1-----1,2,4-Trichlorobenzene	10.	U
91-20-5-----Naphthalene	10.	U
106-47-8-----4-Chloroaniline	10.	U
87-68-3-----Hexachlorobutadiene	10.	U
59-50-7-----4-Chloro-3-methylphenol	10.	U
91-57-6-----2-Methylnaphthalene	10.	U
77-47-4-----Hexachlorocyclopentadiene	10.	U
88-06-2-----2,4,6-Trichlorophenol	10.	U
95-95-4-----2,4,5-Trichlorophenol	50.	U
91-58-7-----2-Chloronaphthalene	10.	U
88-74-4-----2-Nitroaniline	50.	U
131-11-3-----Dimethylphthalate	10.	U
208-96-8-----Acenaphthylene	10.	U
606-20-2-----2,6-Dinitrotoluene	10.	U

## **B. Continuing**

The samples in this SDG were also run under a continuing calibration (CC) standard on 6/20/91. Criteria were met for this calibration with the exception of the %D for 3,3'-dichlorobenzidine (28.4), 2,4-dinitrophenol (31.9), 4-nitroaniline (28.1), and 3-nitroaniline (47.1). No data are affected.

## **IV. Blanks**

No target compounds were detected in SBLK1, extracted 5/20 and analyzed 6/20. No tentatively identified compounds were reported, however small peaks (below the reportable level) are observed early in the chromatogram, prior to the first surrogate peak, at approximate retention times of 7.5 and 7.8 minutes. Small peaks at similar retention times are visible in the chromatograms for all the samples in this SDG; none were large enough to report.

No target compounds or reportable TIC's were detected in the field blank, V131S5FB.

## **V. Surrogate Recovery**

All surrogate recoveries were within established QC criteria.

## **VI. Matrix Spike/Matrix Spike Duplicate**

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample V131S5FS. All Percent Recovery (%R) and Relative Percent Difference (RPD) values were within established QC criteria.

## **VII. Field Duplicates**

Samples V131S5FS and V131S5FD were field duplicates. Only one target analyte, 1,2-dichlorobenzene, was detected in these samples, at 1 ug/L in each case. Results were reported with a "J" qualifier, since they are below the quantitation limit of 10 ug/L. No TIC's were detected in either sample.

## **VIII. Internal Standards Performance**

All internal standard areas and retention times were within the established QC limits for acceptance.

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

I SAMPLE NO.

V131S5FD

00040

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3515.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2744

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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#### **IX. TCL Compound Identification**

Compound identifications are properly reported and documented in all cases.

#### **X. Compound Quantitation and Reported Detection Limits**

Results and quantitation limits are correctly reported; no dilutions were performed in this SDG.

#### **XI. Tentatively Identified Compounds**

No tentatively identified compounds were reported in any of the samples in this SDG. Two early-eluting peak in the method blank were also observed in the samples, but none was high enough to be considered for reporting.

#### **XII. System Performance**

No system performance problems were observed in the raw data presented in this data package.

#### **XIII. Overall Assessment**

Sample results are usable as reported, no qualifiers have been applied.

Incomplete, unclear, or inaccurate Chain of Custody (COC) records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the COC records included in this data package:

1. More custody records are included than are pertinent to this package; this could cause confusion as to the disposition of the rest of the data requested on the COC's.

2. Transfer signatures are incomplete: no "Accepted by" signature is present on 9 of the 10 forms in the package, and the "Relinquished by" signature does not include the affiliation of the person involved.

3. The signature as well as the written name of the sampler at the top of the form should be a full name, not first initial only.

4. Cold storage is not documented.

5. MS/MSD analyses are a laboratory-initiated quality control activity; there should not be separate samples on the COC identified as "MS" and "MSD".

6. Cross-outs are not initialled or dated.

Manually integrated areas should be documented in the data package to allow review of the integration method used.



1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

LAB SAMPLE NO.

00025 V140S5FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3513.4

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2747

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

DOC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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108-95-2-----Phenol	10.	U
111-44-4-----bis(2-Chloroethyl) ether	10.	U
95-57-8-----2-Chlorophenol	10.	U
541-73-1-----1,3-Dichlorobenzene	10.	U
106-46-7-----1,4-Dichlorobenzene	10.	U
100-51-6-----Benzyl alcohol	10.	U
95-50-1-----1,2-Dichlorobenzene	10.	U
95-48-7-----2-Methylphenol	10.	U
108-60-1-----bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----4-Methylphenol	10.	U
621-64-7-----N-Nitroso-di-n-propylamine	10.	U
67-72-1-----Hexachloroethane	10.	U
98-95-3-----Nitrobenzene	10.	U
78-59-1-----Isophorone	10.	U
88-75-5-----2-Nitrophenol	10.	U
105-67-9-----2,4-Dimethylphenol	10.	U
65-85-0-----Benzoic acid	50.	U
111-91-1-----bis(2-Chloroethoxy) methane	10.	U
120-83-2-----2,4-Dichlorophenol	10.	U
120-82-1-----1,2,4-Trichlorobenzene	10.	U
91-20-3-----Naphthalene	10.	U
106-47-8-----4-Chloroaniline	10.	U
87-68-3-----Hexachlorobutadiene	10.	U
59-50-7-----4-Chloro-3-methylphenol	10.	U
91-57-6-----2-Methylnaphthalene	10.	U
77-47-4-----Hexachlorocyclopentadiene	10.	U
88-06-2-----2,4,6-Trichlorophenol	10.	U
95-95-4-----2,4,5-Trichlorophenol	50.	U
91-58-7-----2-Chloronaphthalene	10.	U
88-74-4-----2-Nitroaniline	50.	U
131-11-3-----Dimethylphthalate	10.	U
208-96-8-----Acenaphthylene	10.	U
606-20-2-----2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

\ SAMPLE NO.

V140S5FS

Lab Name: PACE Contract: 00026

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3513.4

Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2747

Level: (low/med) LOW Date Received: 5/15/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2-----	3-Nitroaniline	50.	U
83-32-9-----	Acenaphthene	10.	U
51-28-5-----	2,4-Dinitrophenol	50.	U
100-02-7-----	4-Nitrophenol	50.	U
132-64-9-----	Dibenzofuran	10.	U
121-14-2-----	2,4-Dinitrotoluene	10.	U
84-66-2-----	Diethylphthalate	10.	U
7005-72-3-----	4-Chlorophenyl-phenylether	10.	U
86-73-7-----	Fluorene	10.	U
100-01-6-----	4-Nitroaniline	50.	U
534-52-1-----	4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----	N-Nitrosodiphenylamine	10.	U
101-55-3-----	4-Bromophenyl-phenylether	10.	U
118-74-1-----	Hexachlorobenzene	10.	U
87-86-5-----	Pentachlorophenol	50.	U
85-01-8-----	Phenanthrene	10.	U
120-12-7-----	Anthracene	10.	U
84-74-2-----	Di-n-butylphthalate	10.	U
206-44-0-----	Fluoranthene	10.	U
129-00-0-----	Pyrene	10.	U
85-68-7-----	Butylbenzylphthalate	10.	U
91-94-1-----	3,3'-Dichlorobenzidine	20.	U
56-55-3-----	Benzo(a)anthracene	10.	U
218-01-9-----	Chrysene	10.	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----	Di-n-octylphthalate	10.	U
205-99-2-----	Benzo(b)fluoranthene	10.	U
207-08-9-----	Benzo(k)fluoranthene	10.	U
50-32-8-----	Benzo(a)pyrene	10.	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----	Dibenzo(a,h)anthracene	10.	U
191-24-2-----	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

V140S5FS

Lab Name: PACE

Contract: 00027

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3513.4

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2747

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

00031

V131S5FS

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3514.2

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2748

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/L

Q

108-95-2-----Phenol	10.	U
111-44-4-----bis(2-Chloroethyl) ether	10.	U
95-57-8-----2-Chlorophenol	10.	U
541-73-1-----1,3-Dichlorobenzene	10.	U
106-46-7-----1,4-Dichlorobenzene	10.	U
100-51-6-----Benzyl alcohol	10.	U
95-50-1-----1,2-Dichlorobenzene	1.	J
95-48-7-----2-Methylphenol	10.	U
108-60-1-----bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----4-Methylphenol	10.	U
621-64-7-----N-Nitroso-di-n-propylamine	10.	U
67-72-1-----Hexachloroethane	10.	U
98-95-3-----Nitrobenzene	10.	U
78-59-1-----Isophorone	10.	U
88-75-5-----2-Nitrophenol	10.	U
105-67-9-----2,4-Dimethylphenol	10.	U
65-85-0-----Benzoic acid	50.	U
111-91-1-----bis(2-Chloroethoxy) methane	10.	U
120-83-2-----2,4-Dichlorophenol	10.	U
120-82-1-----1,2,4-Trichlorobenzene	10.	U
91-20-3-----Naphthalene	10.	U
106-47-8-----4-Chloroaniline	10.	U
87-68-3-----Hexachlorobutadiene	10.	U
59-50-7-----4-Chloro-3-methylphenol	10.	U
91-57-6-----2-Methylnaphthalene	10.	U
77-47-4-----Hexachlorocyclopentadiene	10.	U
88-06-2-----2,4,6-Trichlorophenol	10.	U
95-95-4-----2,4,5-Trichlorophenol	50.	U
91-58-7-----2-Chloronaphthalene	10.	U
88-74-4-----2-Nitroaniline	50.	U
131-11-3-----Dimethylphthalate	10.	U
208-96-8-----Acenaphthylene	10.	U
606-20-2-----2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

1 SAMPLE NO.

V131S5FS

Lab Name: PACE

Contract: 00032

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3514.2

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2748

Level: (low/med) LOW

Date Received: 5/15/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

99-09-2-----3-Nitroaniline	50.	U
83-32-9-----Acenaphthene	10.	U
51-28-5-----2,4-Dinitrophenol	50.	U
100-02-7-----4-Nitrophenol	50.	U
132-64-9-----Dibenzofuran	10.	U
121-14-2-----2,4-Dinitrotoluene	10.	U
84-66-2-----Diethylphthalate	10.	U
7005-72-3-----4-Chlorophenyl-phenylether	10.	U
86-73-7-----Fluorene	10.	U
100-01-6-----4-Nitroaniline	50.	U
534-52-1-----4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----N-Nitrosodiphenylamine	10.	U
101-55-3-----4-Bromophenyl-phenylether	10.	U
118-74-1-----Hexachlorobenzene	10.	U
87-86-5-----Pentachlorophenol	50.	U
85-01-8-----Phenanthrene	10.	U
120-12-7-----Anthracene	10.	U
84-74-2-----Di-n-butylphthalate	10.	U
206-44-0-----Fluoranthene	10.	U
129-00-0-----Pyrene	10.	U
85-68-7-----Butylbenzylphthalate	10.	U
91-94-1-----3,3'-Dichlorobenzidine	20.	U
56-55-3-----Benzo(a)anthracene	10.	U
218-01-9-----Chrysene	10.	U
117-81-7-----bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----Di-n-octylphthalate	10.	U
205-99-2-----Benzo(b)fluoranthene	10.	U
207-08-9-----Benzo(k)fluoranthene	10.	U
50-32-8-----Benzo(a)pyrene	10.	U
193-39-5-----Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----Dibenzo(a,h)anthracene	10.	U
191-24-2-----Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

I SAMPLE NO.

V131S5FS

Lab Name: PACE

Contract: 00033

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3514.2

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2748

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec. 100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

000155FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3515.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2744

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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108-95-2-----Phenol	10.	U
111-44-4-----bis(2-Chloroethyl) ether	10.	U
95-57-8-----2-Chlorophenol	10.	U
541-73-1-----1,3-Dichlorobenzene	10.	U
106-46-7-----1,4-Dichlorobenzene	10.	U
100-51-6-----Benzyl alcohol	10.	U
95-50-1-----1,2-Dichlorobenzene	1.	J
95-48-7-----2-Methylphenol	10.	U
108-60-1-----bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----4-Methylphenol	10.	U
621-64-7-----N-Nitroso-di-n-propylamine	10.	U
67-72-1-----Hexachloroethane	10.	U
98-95-3-----Nitrobenzene	10.	U
78-59-1-----Isophorone	10.	U
88-75-5-----2-Nitrophenol	10.	U
105-67-9-----2,4-Dimethylphenol	10.	U
65-85-0-----Benzoic acid	50.	U
111-91-1-----bis(2-Chloroethoxy) methane	10.	U
120-83-2-----2,4-Dichlorophenol	10.	U
120-82-1-----1,2,4-Trichlorobenzene	10.	U
91-20-3-----Naphthalene	10.	U
106-47-8-----4-Chloroaniline	10.	U
87-68-3-----Hexachlorobutadiene	10.	U
59-50-7-----4-Chloro-3-methylphenol	10.	U
91-57-6-----2-Methylnaphthalene	10.	U
77-47-4-----Hexachlorocyclopentadiene	10.	U
88-06-2-----2,4,6-Trichlorophenol	10.	U
95-95-4-----2,4,5-Trichlorophenol	50.	U
91-58-7-----2-Chloronaphthalene	10.	U
88-74-4-----2-Nitroaniline	50.	U
131-11-3-----Dimethylphthalate	10.	U
208-96-8-----Acenaphthylene	10.	U
606-20-2-----2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

\ SAMPLE NO.

Lab Name: PACE

Contract:

V131S5FD  
00039

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3515.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2744

Level: (low/med) LOW

Date Received: 5/15/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

99-09-2-----3-Nitroaniline	50.	U
83-32-9-----Acenaphthene	10.	U
51-28-5-----2,4-Dinitrophenol	50.	U
100-02-7-----4-Nitrophenol	50.	U
132-64-9-----Dibenzofuran	10.	U
121-14-2-----2,4-Dinitrotoluene	10.	U
84-66-2-----Diethylphthalate	10.	U
7005-72-3-----4-Chlorophenyl-phenylether	10.	U
86-73-7-----Fluorene	10.	U
100-01-6-----4-Nitroaniline	50.	U
534-52-1-----4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----N-Nitrosodiphenylamine	10.	U
101-55-3-----4-Bromophenyl-phenylether	10.	U
118-74-1-----Hexachlorobenzene	10.	U
87-86-5-----Pentachlorophenol	50.	U
85-01-8-----Phenanthrene	10.	U
120-12-7-----Anthracene	10.	U
84-74-2-----Di-n-butylphthalate	10.	U
206-44-0-----Fluoranthene	10.	U
129-00-0-----Pyrene	10.	U
85-68-7-----Butylbenzylphthalate	10.	U
91-94-1-----3,5-Dichlorobenzidine	20.	U
56-55-3-----Benzo(a)anthracene	10.	U
218-01-9-----Chrysene	10.	U
117-81-7-----bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----Di-n-octylphthalate	10.	U
205-99-2-----Benzo(b)fluoranthene	10.	U
207-08-9-----Benzo(k)fluoranthene	10.	U
50-32-8-----Benzo(a)pyrene	10.	U
193-39-5-----Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----Dibenzo(a,h)anthracene	10.	U
191-24-2-----Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine



1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

1 SAMPLE NO.

Lab Name: PACE

Contract:

V131S5FD

00040

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3515.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2744

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V13155FB5  
00045

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3516.9

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2749

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

108-95-2-----Phenol	10.	U
111-44-4-----bis(2-Chloroethyl) ether	10.	U
95-57-8-----2-Chlorophenol	10.	U
541-73-1-----1,3-Dichlorobenzene	10.	U
106-46-7-----1,4-Dichlorobenzene	10.	U
100-51-6-----Benzyl alcohol	10.	U
95-50-1-----1,2-Dichlorobenzene	10.	U
95-48-7-----2-Methylphenol	10.	U
108-60-1-----bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----4-Methylphenol	10.	U
621-64-7-----N-Nitroso-di-n-propylamine	10.	U
67-72-1-----Hexachloroethane	10.	U
98-95-3-----Nitrobenzene	10.	U
78-59-1-----Isophorone	10.	U
88-75-5-----2-Nitrophenol	10.	U
105-67-9-----2,4-Dimethylphenol	10.	U
65-85-0-----Benzoic acid	50.	U
111-91-1-----bis(2-Chloroethoxy) methane	10.	U
120-83-2-----2,4-Dichlorophenol	10.	U
120-82-1-----1,2,4-Trichlorobenzene	10.	U
91-20-3-----Naphthalene	10.	U
106-47-8-----4-Chloroaniline	10.	U
87-68-3-----Hexachlorobutadiene	10.	U
59-50-7-----4-Chloro-3-methylphenol	10.	U
91-57-6-----2-Methylnaphthalene	10.	U
77-47-4-----Hexachlorocyclopentadiene	10.	U
88-06-2-----2,4,6-Trichlorophenol	10.	U
95-95-4-----2,4,5-Trichlorophenol	50.	U
91-58-7-----2-Chloronaphthalene	10.	U
88-74-4-----2-Nitroaniline	50.	U
131-11-3-----Dimethylphthalate	10.	U
208-96-8-----Acenaphthylene	10.	U
606-20-2-----2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

I . SAMPLE NO.

Lab Name: PACE

Contract:

V131S5FB

00046

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3516.9

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2749

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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99-09-2-----3-Nitroaniline_____	50.	U
83-32-9-----Acenaphthene_____	10.	U
51-28-5-----2,4-Dinitrophenol _____	50.	U
100-02-7-----4-Nitrophenol _____	50.	U
132-64-9-----Dibenzofuran_____	10.	U
121-14-2-----2,4-Dinitrotoluene_____	10.	U
84-66-2-----Diethylphthalate_____	10.	U
7005-72-3-----4-Chlorophenyl-phenylether_____	10.	U
86-73-7-----Fluorene_____	10.	U
100-01-6-----4-Nitroaniline_____	50.	U
534-52-1-----4,6-Dinitro-2-methylphenol_____	50.	U
86-30-6-----N-Nitrosodiphenylamine_____	10.	U
101-55-3-----4-Bromophenyl-phenylether_____	10.	U
118-74-1-----Hexachlorobenzene_____	10.	U
87-86-5-----Pentachlorophenol _____	50.	U
85-01-8-----Phenanthrene_____	10.	U
120-12-7-----Anthracene_____	10.	U
84-74-2-----Di-n-butylphthalate _____	10.	U
206-44-0-----Fluoranthene_____	10.	U
129-00-0-----Pyrene_____	10.	U
85-68-7-----Butylbenzylphthalate_____	10.	U
91-94-1-----3,3'-Dichlorobenzidine_____	20.	U
56-55-3-----Benzo(a)anthracene_____	10.	U
218-01-9-----Chrysene_____	10.	U
117-81-7-----bis(2-Ethylhexyl)phthalate_____	10.	U
117-84-0-----Di-n-octylphthalate _____	10.	U
205-99-2-----Benzo(b)fluoranthene_____	10.	U
207-08-9-----Benzo(k)fluoranthene_____	10.	U
50-32-8-----Benzo(a)pyrene_____	10.	U
193-39-5-----Indeno(1,2,3-cd)pyrene_____	10.	U
53-70-3-----Dibenzo(a,h)anthracene_____	10.	U
191-24-2-----Benzo(g,h,i)perylene_____	10.	U

(1) - Cannot be separated from diphenylamine

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

\ SAMPLE NO.

V131S5FB

00047

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3516.9

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2749

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G & H PROJECT  
AREAL SAMPLING  
VOLATILES ANALYSIS DATA

Samples Collected 5/15/91

Chemical Analyses Performed By:  
PACE, Incorporated

August 16, 1991

By:  
Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Detection limits for aromatic compounds were estimated in Samples UG16, CLUG16, FDUG16, and FBUG16. Results for 2-butanone were rejected in all four samples.

Low levels of trichloroethene not originally reported by the laboratory in Samples UG16, CLUG16, and FDUG16 have been added to the data summary forms and Form I's; spectra confirming the identification of this compound were requested from the laboratory and are provided with this validation report.

Problems identified on the Chain of Custody records include: (1) corrections to entries on the forms are made incorrectly, and do not include the date (initials are recorded); (2) two of the three transfer signatures do not indicate the affiliation(s) of the individuals involved, and the samples were not relinquished prior to the final acceptance signature; (3) documentation of preservation is unclear, i.e. the meaning of a checkmark in the "VOA" column in the "Preservatives" section of the custody form is unknown; (4) separate entries should not be made on the custody record for MS/MSD samples; and (5) sample numbers recorded on the Form I's in the data package are not consistent with the sample numbers recorded on the Chain of Custody, e.g. "CLUG16" is on the custody record and "UG16CL" is on Form I.

Validation of organic data is conducted in conformance with U.S. Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses (February 1, 1988), with modifications by EPA Region I (November 1, 1988).

Based on the supporting documentation, qualifier codes as reported by the laboratory may be added, deleted, or modified by the data validator. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the referenced Functional Guidelines:

- U - The material was analyzed for, but not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary forms and Form I's (copied from the data package) to qualify some of the results as appropriate based on the data review.

### Case Narrative

Six groundwater samples (including separate samples for matrix spike and matrix spike duplicate analysis) were collected on May 15, 1991, and received by PACE, Inc. on May 16, 1991. The laboratory was requested to perform volatile organics analysis (VOA); the EPA Contract Laboratory Program (CLP) Statement of Work dated 2/88 was followed.

The following samples are included in this Sample Delivery Group:

<u>Client ID</u>	<u>Lab ID</u>	<u>Collection Date</u>
UG16	3568	05/15/91
FDUG16	3569	05/15/91
CLUG16	3567	05/15/91
FBUG16	3572	05/15/91

Volatiles analysis results for these samples were reported by the laboratory under Project Number 810516.510.



### **Volatiles**

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## I. Holding Times

Samples UG16, CLUG16, FDUG16, and FBUG16 were analyzed beyond the 7-day holding time for samples that are not preserved with hydrochloric acid (HCl) in the field, but were all analyzed within 14 days of collection. Detection limits for all aromatic compounds (benzene, toluene, ethylbenzene, chlorobenzene, styrene, and xylenes) in these samples are qualified as estimated "UJ"; no positive results were reported for any of the aromatic compounds.

The chain of custody record indicates that the samples were "chilled", but this reference could be interpreted to be applicable only to Sample CLUG16, since it is recorded in the "Remarks" column for that sample entry. Care should be taken to clearly document activities as applicable to any or all samples on the custody form. The meaning and use of the "VOA" column in the "Preservatives" section of the custody form is also unclear. The box is checked for each sample entered on the form, but what, if any, preservative was used is unknown. It has been assumed that the required VOA preservative, hydrochloric acid (HCl), was not used for the purposes of this validation.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

## III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data are affected.

### A. Initial

The samples were analyzed under a single initial calibration, performed on 5/17/91. All criteria were met in this calibration with the exception of the response factor (RF) and Percent Relative Standard Deviation (%RSD) for 2-butanone (RF actual 0.03, criterion 0.10; %RSD actual 39.9, criterion 30). Results for 2-butanone are rejected, "R", in Samples UG16, CLUG16, FDUG16, and FBUG16 due to reduced sensitivity as indicated by the very low RF.

## B. Continuing

Sample analyses were performed on instrument G on 5/23/91. Continuing calibration criteria were met with the exception of the RF and Percent Difference (%D) for 2-butanone (RF actual 0.015, criterion 0.10; %D actual 55.9, criterion 25), and the %D for bromomethane (actual 26, criterion 25), and vinyl acetate (actual 28, criterion 25). No additional data are affected.

## IV. Blanks

Acetone was reported at 5 ug/L in VBLK01; no target compounds or extraneous peaks were detected in the field blank. Acetone was not detected in any of the samples, therefore no data are affected.

## V. Surrogate Recovery

All surrogate recoveries were within acceptable criteria.

## VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample UG16. Percent Recoveries (%R) for benzene and toluene were high in both the MS and MSD:

	<u>%R-MS</u>	<u>%R-MSD</u>	<u>QC Limits</u>
Benzene	147	157	76-127
Toluene	137	157	76-125

Corresponding Relative Percent Difference (RPD) values are within limits, due to the consistency of the results. No data are affected.

Recoveries for trichloroethene were calculated without accounting for the low level (69 ppb) detected in the unspiked sample. Corrected recoveries are 106% and 109%; corrected RPD is 3%. All values remain within QC limits. A corrected Form III is included with this report.

## VII. Field Duplicates

Compounds and concentrations reported for Samples UG16, FDUG16, and CLUG16 were as follows:

<u>Compound</u>	<u>UG16</u>	<u>FDUG16</u>	<u>CLUG16</u>
Trichloroethene	69 ppb	75 ppb	81 ppb
Tetrachloroethene	1700 ppb	1800 ppb	1900 ppb

Agreement between the results for these three samples was very good.

#### **VIII. Internal Standards Performance**

Internal standard areas and retention times were within acceptable limits for all sample and QC analyses in this sample delivery group.

#### **IX. TCL Compound Identification**

Reported TCL compound identifications were acceptable. Levels of trichloroethene just above the CRQL were observed on the quantitation reports for Samples UG16, FDUG16, and CLUG16, but were not reported by the laboratory. Spectra for these peaks were requested, and are included with this report. Based on review of these spectra, it has been determined that trichloroethene is identifiable in each of the samples and should be reported.

#### **X. Compound Quantitation and Reported Detection Limits**

Samples UG16, FDUG16, and CLUG16 were analyzed as dilutions to achieve tetrachloroethene results within the linear range of the instrument; no undiluted runs of these samples were reported or performed, per conversation with C. Corkey of PACE, Inc. The tetrachloroethene concentrations reported in the diluted analyses were acceptable.

Reportable levels of trichloroethene have been added to the data summary forms and Form I's for Samples UG16, FDUG16, and CLUG16.

Contract Required Quantitation Limits (CRQL's) were appropriately adjusted to reflect the dilutions performed for each sample.

#### **XI. Tentatively Identified Compounds**

No tentatively identified compounds (TIC's) were observed or reported in these samples.

### **XII. System Performance**

System performance was satisfactory throughout the analysis of these samples.

### **XIII. Overall Assessment**

The sample results are usable as reported with the following qualifications and modifications:

Detection limits for the aromatic compounds were estimated in all four samples.

Results for 2-butanone were rejected in all four samples.

Positive values for trichloroethene were added to the data summary forms for Samples UG16, FDUG16, and CLUG16.

Incomplete, unclear, or inaccurate Chain of Custody records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the custody record in this data package:

1. Corrections do not include the date they were made, and in one case a "write-over" is used.

2. Two of the three signatures do not include the affiliations of the parties involved, and no "Relinquished by" signature is recorded prior to (presumed) laboratory receipt.

3. Documentation of preservation is unclear, including the reference to cold storage and the use of the "VOA" column in the "Preservatives" section of the form.

4. MS/MSD analyses are a laboratory-initiated quality control activity; there should not, therefore, be separate samples on the chain of custody identified as "MS" and "MSD".

Manually integrated areas should be documented in the data package to allow review of the integration method used.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3568.1

Sample wt/vol: 0.4 g. (g/mL) ML

Lab File ID: G3080

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/L
74-87-3	Chloromethane	120.	U
74-83-9	Bromomethane	120.	U
75-01-4	Vinyl Chloride	120.	U
75-00-3	Chloroethane	120.	U
75-09-2	Methylene Chloride	62.	U
67-64-1	Acetone	120.	U
75-15-0	Carbon Disulfide	62.	U
75-35-4	1,1-Dichloroethene	62.	U
75-34-3	1,1-Dichloroethane	62.	U
540-59-0	1,2-Dichloroethene (total)	62.	U
67-66-3	Chloroform	62.	U
107-06-2	1,2-Dichloroethane	62.	U
78-93-3	2-Butanone	120.	U
71-55-6	1,1,1-Trichloroethane	62.	U
56-23-5	Carbon Tetrachloride	62.	U
108-05-4	Vinyl Acetate	120.	U
75-27-4	Bromodichloromethane	62.	U
78-87-5	1,2-Dichloropropane	62.	U
10061-01-5	cis-1,3-Dichloropropene	62.	U
79-01-6	Trichloroethene	62.	U
124-48-1	Dibromochloromethane	62.	U
79-00-5	1,1,2-Trichloroethane	62.	U
71-43-2	Benzene	62.	U
10061-02-6	Trans-1,3-Dichloropropene	62.	U
75-25-2	Bromoform	62.	U
108-10-1	4-Methyl-2-Pentanone	120.	U
591-78-6	2-Hexanone	120.	U
127-18-4	Tetrachloroethene	1700.	U
79-34-5	1,1,2,2-Tetrachloroethane	62.	U
108-88-3	Toluene	62.	U
108-90-7	Chlorobenzene	62.	U
100-41-4	Ethylbenzene	62.	U
100-42-5	Styrene	62.	U
1330-20-7	Xylene (total)	62.	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

✓  
V616CL

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No. 00023 <sup>M/ 6/18/91</sup>

Matrix: (soil/water) WATER

Lab Sample ID: 3567.3

Sample wt/vol: 0.4 g. (g/mL) ML

Lab File ID: G3079

Level: (low/med) LOW <sup>CAE 7/1/91</sup>

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NO.

COMPOUND

Q

74-87-3	-----Chloromethane	120.	U
74-83-9	-----Bromomethane	120.	U
75-01-4	-----Vinyl Chloride	120.	U
75-00-3	-----Chloroethane	120.	U
75-09-2	-----Methylene Chloride	62.	U
67-64-1	-----Acetone	120.	U
75-15-0	-----Carbon Disulfide	62.	U
75-35-4	-----1,1-Dichloroethene	62.	U
75-34-3	-----1,1-Dichloroethane	62.	U
540-59-0	-----1,2-Dichloroethene (total)	62.	U
67-66-3	-----Chloroform	62.	U
107-06-2	-----1,2-Dichloroethane	62.	U
78-93-3	-----2-Butanone	120.	U
71-55-6	-----1,1,1-Trichloroethane	62.	U
56-23-5	-----Carbon Tetrachloride	62.	U
108-05-4	-----Vinyl Acetate	120.	U
75-27-4	-----Bromodichloromethane	62.	U
78-87-5	-----1,2-Dichloropropane	62.	U
10061-01-5	-----cis-1,3-Dichloropropene	62.	U
79-01-6	-----Trichloroethene	81. 62.	U
124-48-1	-----Dibromochloromethane	62.	U
79-00-5	-----1,1,2-Trichloroethane	62.	U
71-43-2	-----Benzene	62.	U
10061-02-6	-----Trans-1,3-Dichloropropene	62.	U
75-25-2	-----Bromoform	62.	U
108-10-1	-----4-Methyl-2-Pentanone	120.	U
591-78-6	-----2-Hexanone	120.	U
127-18-4	-----Tetrachloroethene	1900.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	62.	U
108-88-3	-----Toluene	62.	U
108-90-7	-----Chlorobenzene	62.	U
100-41-4	-----Ethylbenzene	62.	U
100-42-5	-----Styrene	62.	U
1330-20-7	-----Xylene (total)	62.	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

u  
V616FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

MM/ 6/18/91

Matrix: (soil/water) WATER

Lab Sample ID: 3559.00029

Sample wt/vol: 0.4 g/mL ML

Lab File ID: 63081

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	120.	U
74-83-9	Bromomethane	120.	U
75-01-4	Vinyl Chloride	120.	U
75-00-3	Chloroethane	120.	U
75-09-2	Methylene Chloride	62.	U
67-64-1	Acetone	120.	U
75-15-0	Carbon Disulfide	62.	U
75-35-4	1,1-Dichloroethene	62.	U
75-34-3	1,1-Dichloroethane	62.	U
540-59-0	1,2-Dichloroethene (total)	62.	U
67-66-3	Chloroform	62.	U
107-06-2	1,2-Dichloroethane	62.	U
78-93-3	2-Butanone	120.	U
71-55-6	1,1,1-Trichloroethane	62.	U
56-23-5	Carbon Tetrachloride	62.	U
108-05-4	Vinyl Acetate	120.	U
75-27-4	Bromodichloromethane	62.	U
78-87-5	1,2-Dichloropropane	62.	U
10061-01-5	cis-1,3-Dichloropropene	62.	U
79-01-6	Trichloroethene	62.	U
124-48-1	Dibromochloromethane	62.	U
79-00-5	1,1,2-Trichloroethane	62.	U
71-43-2	Benzene	62.	U
10061-02-6	Trans-1,3-Dichloropropene	62.	U
75-25-2	Bromoform	62.	U
108-10-1	4-Methyl-2-Pentanone	120.	U
591-78-6	2-Hexanone	120.	U
127-18-4	Tetrachloroethene	1800.	U
79-34-5	1,1,2,2-Tetrachloroethane	62.	U
108-88-3	Toluene	62.	U
108-90-7	Chlorobenzene	62.	U
100-41-4	Ethylbenzene	62.	U
100-42-5	Styrene	62.	U
1330-20-7	Xylene (total)	62.	U

76.

CAE 7/1/91



1A  
VOI FILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

u  
VG16FB

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

MJ 6/18/91

Matrix: (soil/water) WATER

Lab Sample ID: 3572.0 00035

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63077

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	0
---------	----------	--	---

74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

3A  
WATER VOI TLE MATRIX SPIKE/MATRIX SPIKE DUPLICATE COVERY

00012

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: V616

101/ 6/18/91

COMPOUND	SPIKE ADDED (UG/L )	SAMPLE CONCENTRATION (UG/L )	MS CONCENTRATION (UG/L )	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	625.	0.	598.	96.	61-145
Trichloroethene	625.	69. <del>4</del>	731. <i>COE 7/1/91</i>	<del>117.106</del>	71-120
Benzene	625.	0.	921.	147. *	76-127
Toluene	625.	0.	857.	137. *	76-125
Chlorobenzene	625.	0.	668.	107.	75-130

COMPOUND	SPIKE ADDED (UG/L )	MSD CONCENTRATION (UG/L )	MSD % REC #	% RPD #	QC LIMITS RPD REC.
1,1-Dichloroethene	625.	674.	108. <i>COE 7/1/91</i>	12.	14 61-145
Trichloroethene	625.	748.	<del>120.109</del>	<del>2.3</del>	14 71-120
Benzene	625.	979.	157. *	6.	11 76-127
Toluene	625.	979.	157. *	13. <del>1</del>	13 76-125
Chlorobenzene	625.	712.	114.	6.	13 75-130

101/ 6/18/91

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 \ out of 5 outside limits

Spike Recovery: 4 out of 10 outside limits

COMMENTS:



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
AREAL SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/15/91

Chemical Analyses Performed By  
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Vinyl chloride, total 1,2-dichloroethene, tetrachloroethene, and trichloroethene were the only target compound list (TCL) compounds detected. Positive results and detection limits for aromatic compounds were estimated due to holding time violations.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Eight groundwater samples were collected and submitted to PACE, Inc. on May 15, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
G01DB	3578	05/15/91
TBA	3574	05/15/91
UC72	3576	05/15/91
UC112	3580	05/15/91
UC141	3573	05/15/91
UC145	3575	05/15/91
UC223	3577	05/15/91
UG12	3579	05/15/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## I. Holding Times

Since the samples were analyzed outside the 7 day holding time for non-preserved samples but within the 14 day holding time, positive results and detection limits for aromatic compounds were estimated.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

## III. Calibration

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data were affected.

### A. Initial

Initial calibration criteria were met with the exception of the for 2-butanone (RRF 0.03-criteria 0.1). Detection limits were rejected.

### B. Continuing

Continuing calibration criteria not met are summarized below.

<u>Date</u>	<u>Time</u>	<u>Compound</u>	<u>RF</u>	<u>%D</u>
5/23	14:43	2-Butanone	0.015 (0.10)	50.8 (25)
		Bromoform		26.0 (25)
		Vinyl acetate		28.0 (25)
5/24	11:56	2-Butanone	0.019 (0.10)	34.4 (25)
		Vinyl acetate		31.2 (25)
		cis-1,3-Dichloropropene		41.3 (25)
5/25	9:37	Bromomethane		29.6 (25)
		Chloroethane		27.9 (25)
		2-Butanone	0.015 (0.1)	48.7 (25)
		Vinyl acetate		37.8 (25)
		Bromoform		32.1 (25)

<u>Date</u>	<u>Time</u>	<u>Compound</u>	<u>RF</u>	<u>SD</u>
5/27	21:50	Acetone		43.0 (25)
		2-Butanone	0.024 (0.1)	43.9 (25)

( ) Acceptance criteria

Detection limits for 2-butanone were rejected. All other data were acceptable.

**IV. Blanks**

No contamination was found in the trip blank. Acetone was detected in VBLK 01 at 5 ppb and VBLK 03 at 7 ppb. Trichloroethene was detected in VBLK 04 at 3 ppb. Acetone in UC233 was qualified as less than the reported value (U).

**V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

**VI. Matrix Spike/Matrix Spike Duplicate**

No matrix spike/duplicate matrix spike were analyzed.

**VII. Field Duplicates**

No field duplicate was sampled or analyzed.

**VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

**IX. TCL Compound Identification**

Target compounds were properly identified.

**X. Compound Quantitation and Reported Detection Limits**

Results and detection limits were acceptable with regard to the supporting data.



**XI. Tentatively Identified Compounds**

No TICs were detected.

**XII. System Performance**

System performance was acceptable.

**XIII. Overall Assessment of Data for a Case**

Detection limits for 2-butanone were rejected. Detection limits for aromatic compounds were estimated.

Although no field duplicate and matrix spike/matrix spike duplicate data were reported, the surrogate recoveries and internal area counts indicate adequate sample analyses. The end user of the data should be cautious when using this data since complete quality control data were not available.

1A  
VOL .LE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

601DB

00023

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3578.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63113

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:

(ug/L or ug/kg) UG/L

0

74-87-3-----	Chloromethane	100.	U
74-83-9-----	Bromomethane	100.	U
75-01-4-----	Vinyl Chloride	100.	U
75-00-3-----	Chloroethane	100.	U
75-09-2-----	Methylene Chloride	50.	U
67-64-1-----	Acetone	100.	U
75-15-0-----	Carbon Disulfide	50.	U
75-35-4-----	1,1-Dichloroethene	50.	U
75-34-3-----	1,1-Dichloroethane	50.	U
540-59-0-----	1,2-Dichloroethene (total)	50.	U
67-66-3-----	Chloroform	50.	U
107-06-2-----	1,2-Dichloroethane	50.	U
78-93-3-----	2-Butanone	100.	U R
71-55-6-----	1,1,1-Trichloroethane	50.	U
56-23-5-----	Carbon Tetrachloride	50.	U
108-05-4-----	Vinyl Acetate	100.	U
75-27-4-----	Bromodichloromethane	50.	U
78-87-5-----	1,2-Dichloropropane	50.	U
10061-01-5-----	cis-1,3-Dichloropropene	50.	U
79-01-6-----	Trichloroethene	50.	U
124-48-1-----	Dibromochloromethane	50.	U
79-00-5-----	1,1,2-Trichloroethane	50.	U
71-43-2-----	Benzene	50.	U J
10061-02-6-----	Trans-1,3-Dichloropropene	50.	U
75-25-2-----	Bromoform	50.	U
108-10-1-----	4-Methyl-2-Pentanone	100.	U
591-78-6-----	2-Hexanone	100.	U
127-18-4-----	Tetrachloroethene	1000.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	50.	U
108-88-3-----	Toluene	50.	U J
108-90-7-----	Chlorobenzene	50.	U
100-41-4-----	Ethylbenzene	50.	U
100-42-5-----	Styrene	50.	U
1330-20-7-----	Xylene(total)	50.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

601DB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00024

Matrix: (soil/water) WATER

Lab Sample ID: 3578.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63113

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
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9.				
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22.				
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25.				
26.				
27.				
28.				
29.				
30.				

1A  
VOL ILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TBA

00029

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3574.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3078

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/kg) UG/L

Q

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U R
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	5.	U
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	U S
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	5.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	U J
108-90-7-----	Chlorobenzene	5.	U
100-41-4-----	Ethylbenzene	5.	U
100-42-5-----	Styrene	5.	U
1330-20-7-----	Xylene(total)	5.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
T TATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TBA

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00030

Matrix: (soil/water) WATER

Lab Sample ID: 3574.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63078

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
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26.				
27.				
28.				
29.				
30.				

1A  
VOL ILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

UC72

00035

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3576.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63089

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not det.100.

Date Analyzed: 5/24/91

Column: (pack/cap) PACK

Dilution Factor: 330.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	UG/L
74-87-3	-----Chloromethane	3300.	U
74-83-9	-----Bromomethane	3300.	U
75-01-4	-----Vinyl Chloride	3300.	U
75-00-3	-----Chloroethane	3300.	U
75-09-2	-----Methylene Chloride	1700.	U
67-64-1	-----Acetone	3300.	U
75-15-0	-----Carbon Disulfide	1700.	U
75-35-4	-----1,1-Dichloroethene	1700.	U
75-34-3	-----1,1-Dichloroethane	1700.	U
540-59-0	-----1,2-Dichloroethene (total)	1700.	U
67-66-3	-----Chloroform	1700.	U
107-06-2	-----1,2-Dichloroethane	1700.	U
78-93-3	-----2-Butanone	3300.	U R
71-55-6	-----1,1,1-Trichloroethane	1700.	U
56-23-5	-----Carbon Tetrachloride	1700.	U
108-05-4	-----Vinyl Acetate	3300.	U
75-27-4	-----Bromodichloromethane	1700.	U
78-87-5	-----1,2-Dichloropropane	1700.	U
10061-01-5	-----cis-1,3-Dichloropropene	1700.	U
79-01-6	-----Trichloroethene	1700.	U
124-48-1	-----Dibromochloromethane	1700.	U
79-00-5	-----1,1,2-Trichloroethane	1700.	U
71-43-2	-----Benzene	1700.	U J
10061-02-6	-----Trans-1,3-Dichloropropene	1700.	U
75-25-2	-----Bromoform	1700.	U
108-10-1	-----4-Methyl-2-Pentanone	3300.	U
591-78-6	-----2-Hexanone	3300.	U
127-18-4	-----Tetrachloroethene	23000.	
79-34-5	-----1,1,2,2-Tetrachloroethane	1700.	U
108-88-3	-----Toluene	1700.	U J
108-90-7	-----Chlorobenzene	1700.	U
100-41-4	-----Ethylbenzene	1700.	U
100-42-5	-----Styrene	1700.	U
1330-20-7	-----Xylene (total)	1700.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

UC72

00036

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3576.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3089

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/24/91

Column: (pack/cap) PAC

Dilution Factor: 330.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOL .LE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

UC112

00041

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3580.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3154

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not det.100.

Date Analyzed: 5/28/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/L

Q

74-87-3	-----Chloromethane	200.	U
74-83-9	-----Bromomethane	200.	U
75-01-4	-----Vinyl Chloride	200.	U
75-00-3	-----Chloroethane	200.	U
75-09-2	-----Methylene Chloride	100.	U
67-64-1	-----Acetone	200.	U
75-15-0	-----Carbon Disulfide	100.	U
75-35-4	-----1,1-Dichloroethene	100.	U
75-34-3	-----1,1-Dichloroethane	100.	U
540-59-0	-----1,2-Dichloroethene (total)	100.	U
67-66-3	-----Chloroform	100.	U
107-06-2	-----1,2-Dichloroethane	100.	U
78-93-3	-----2-Butanone	200.	U R
71-55-6	-----1,1,1-Trichloroethane	100.	U
56-23-5	-----Carbon Tetrachloride	100.	U
108-05-4	-----Vinyl Acetate	200.	U
75-27-4	-----Bromodichloromethane	100.	U
78-87-5	-----1,2-Dichloropropane	100.	U
10061-01-5	-----cis-1,3-Dichloropropene	100.	U
79-01-6	-----Trichloroethene	270.	U
124-48-1	-----Dibromochloromethane	100.	U
79-00-5	-----1,1,2-Trichloroethane	100.	U
71-43-2	-----Benzene	100.	U J
10061-02-6	-----Trans-1,3-Dichloropropene	100.	U
75-25-2	-----Bromoform	100.	U
108-10-1	-----4-Methyl-2-Pentanone	200.	U
591-78-6	-----2-Hexanone	200.	U
127-18-4	-----Tetrachloroethene	1700.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	100.	U
108-88-3	-----Toluene	100.	U J
108-90-7	-----Chlorobenzene	100.	U
100-41-4	-----Ethylbenzene	100.	U
100-42-5	-----Styrene	100.	U
1330-20-7	-----Xylene(total)	100.	U



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

UC112

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00042

Matrix: (soil/water) WATER

Lab Sample ID: 3580.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3154

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOL ILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

UC141

00049

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3573.8

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3115

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	4.	J
540-59-0	-----1,2-Dichloroethene (total)	7.	
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U R
71-55-6	-----1,1,1-Trichloroethane	5.	J
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	J
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U J
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	10.	
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	8.	J
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	3.	J

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

UC141

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00050

Matrix: (soil/water) WATER

Lab Sample ID: 3573.8

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3115

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACE

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

UC145

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3575.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3109

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not det.100.

Date Analyzed: 5/24/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U R
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U S
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	96.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U S
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

UC145

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00062

Matrix: (soil/water) WATER

Lab Sample ID: 3575.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63109

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/24/91

Column: (pack/cap) PACH

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOL ILE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

UC233

00067

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3577.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63114

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/kg) UG/L

Q

74-87-3-----	Chloromethane	10.	U	
74-83-9-----	Bromomethane	10.	U	
75-01-4-----	Vinyl Chloride	10.	U	
75-00-3-----	Chloroethane	10.	U	
75-09-2-----	Methylene Chloride	5.	U	
67-64-1-----	Acetone	<del>1.</del>	<del>U</del>	10 U
75-15-0-----	Carbon Disulfide	5.	U	
75-35-4-----	1,1-Dichloroethene	5.	U	
75-34-3-----	1,1-Dichloroethane	5.	U	
540-59-0-----	1,2-Dichloroethene (total)	5.	U	
67-66-3-----	Chloroform	5.	U	
107-06-2-----	1,2-Dichloroethane	5.	U	
78-93-3-----	2-Butanone	10.	U	R
71-55-6-----	1,1,1-Trichloroethane	5.	U	
56-23-5-----	Carbon Tetrachloride	5.	U	
108-05-4-----	Vinyl Acetate	10.	U	
75-27-4-----	Bromodichloromethane	5.	U	
78-87-5-----	1,2-Dichloropropane	5.	U	
10061-01-5-----	cis-1,3-Dichloropropene	5.	U	
79-01-6-----	Trichloroethene	5.	U	
124-48-1-----	Dibromochloromethane	5.	U	
79-00-5-----	1,1,2-Trichloroethane	5.	U	
71-43-2-----	Benzene	5.	U	S
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U	
75-25-2-----	Bromoform	5.	U	
108-10-1-----	4-Methyl-2-Pentanone	10.	U	
591-78-6-----	2-Hexanone	10.	U	
127-18-4-----	Tetrachloroethene	5.	U	
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U	
108-88-3-----	Toluene	15.	U	S
108-90-7-----	Chlorobenzene	5.	U	
100-41-4-----	Ethylbenzene	5.	U	
100-42-5-----	Styrene	5.	U	
1330-20-7-----	Xylene(total)	5.	U	

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

UC233

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No. 0000

Matrix: (soil/water) WATER

Lab Sample ID: 3577.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63114

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACE

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOL. ILE ORGANICS ANALYSIS DATA SHEET

TPA SAMPLE NO.

UG12

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3579.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3122

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	25.	U
74-83-9	-----Bromomethane	25.	U
75-01-4	-----Vinyl Chloride	110.	
75-00-3	-----Chloroethane	25.	U
75-09-2	-----Methylene Chloride	12.	U
67-64-1	-----Acetone	25.	U
75-15-0	-----Carbon Disulfide	12.	U
75-35-4	-----1,1-Dichloroethene	12.	U
75-34-3	-----1,1-Dichloroethane	12.	U
540-59-0	-----1,2-Dichloroethene (total)	260.	
67-66-3	-----Chloroform	12.	U
107-06-2	-----1,2-Dichloroethane	12.	U
78-93-3	-----2-Butanone	25.	U R
71-55-6	-----1,1,1-Trichloroethane	12.	U
56-23-5	-----Carbon Tetrachloride	12.	U
108-05-4	-----Vinyl Acetate	25.	U
75-27-4	-----Bromodichloromethane	12.	U
78-87-5	-----1,2-Dichloropropane	12.	U
10061-01-5	-----cis-1,3-Dichloropropene	12.	U
79-01-6	-----Trichloroethene	120.	
124-48-1	-----Dibromochloromethane	12.	U
79-00-5	-----1,1,2-Trichloroethane	12.	U
71-43-2	-----Benzene	12.	U S
10061-02-6	-----Trans-1,3-Dichloropropene	12.	U
75-25-2	-----Bromoform	12.	U
108-10-1	-----4-Methyl-2-Pentanone	25.	U
591-78-6	-----2-Hexanone	25.	U
127-18-4	-----Tetrachloroethene	12.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	12.	U
108-88-3	-----Toluene	12.	U J
108-90-7	-----Chlorobenzene	12.	U
100-41-4	-----Ethylbenzene	12.	U
100-42-5	-----Styrene	12.	U
1330-20-7	-----Xylene(total)	12.	U



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
T TATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

UG12

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00075

Matrix: (soil/water) WATER

Lab Sample ID: 3579.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3122

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/15/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Tetrachloroethene was the only compound detected in Unifirst samples and vinyl chloride, total 1,2-dichloroethene, and trichloroethene were the only compounds detected in Grace samples. No tentatively identified compounds (TICs) were detected.

Cooler temperature for the UniFirst samples was 12° C when received in the laboratory. Cooler temperature for the Grace samples was 5°C. Temperatures outside the 4°C  $\pm$  2°C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable (Note: analyte may or may not be present).

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Eight treatment system samples were collected (both Unifirst and Grace) and submitted for analysis to PACE, Inc. on May 15, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses. V131V6FS was used for the matrix spike and matrix spike duplicate.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
V131V6FD	3585	05/15/91
V131V6FS	3584	05/15/91
V131V6TB	3586	05/15/91
V154V6FS	3588	05/15/91
V197V6FS	3584	05/15/91
S1-18	3595	05/15/91
S1-18TB	3597	05/15/91
S4-16	3602	05/15/91

volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## I. Holding Times

Since S1-18TB and S4-16 were analyzed outside the 7 day holding time for non-preserved samples but within the 14 day holding time, detection limits for aromatic compounds were estimated. All other samples were analyzed within the 7 day holding time.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

## III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### A. Initial

Initial calibration criteria were met with the exception of 2-butanone which had an average RRF of 0.030 and %RSD of 39.8. The average RRF was reported as 0.033 and %RSD 31.1. Detection limits for 2-butanone were rejected.

### B. Continuing

Continuing calibration criteria not met are summarized below.

Date	Time	Compound	RF	%D
5/21	7:54	2-Butanone	0.014 (0.10)	56.1 (25)
5/21	20:21	2-Butanone	0.020 (0.10)	33.4 (25)
		Acetone		31.4 (25)
		Chloroethene		27.7 (25)

### ( ) Acceptance criteria

Detection limits for 2-butanone were rejected. All other data were not affected.

#### **IV. Blanks**

Method blanks and trip blanks were clean.

#### **V. Surrogate Recovery**

All surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.

#### **VII. Field Duplicates**

Vinyl chloride was detected in the sample at 400 ppb, the field duplicate at 490 ppb, in the MS at 440 ppb, and in the MSD at 450 ppb (%RSD 6.2). Total 1,2-dichloroethene was detected in the sample at 940 ppb, the field duplicate at 1000 ppb, in the MS at 910 ppb, and in the MSD at 900 ppb (%RSD 2.3). Trichloroethene was detected in the field sample at 490 ppb and in the duplicate at 400 ppb. The data are acceptable.

#### **VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

#### **IX. TCL Compound Identification**

Target compounds were properly identified.

#### **X. Compound Quantitation and Reported Detection Limits**

Detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were detected.

## **XII. System Performance**

System performance requires attention. Manual integrations should be addressed. Two samples were analyzed outside the required holding time. Response factor criteria should be monitored by the laboratory.

## **XIII. Overall Assessment of Data for a Case**

All 2-butanone detection limits were rejected because of the low RF.

Aromatic compounds in Samples S1-18TB and S4-16 were qualified as estimates due to missed holding times.



## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131V6FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00019

Matrix: (soil/water) WATER

Lab Sample ID: 3585.1

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3016

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	U
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	490.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1000.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	<del>100.</del>	U <i>HP</i>
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	420.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V131V6FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00020

Matrix: (soil/water) WATER

Lab Sample ID: 3585.1

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63016

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131V6FS

00027

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3584.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3013

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	400.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	940.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U R
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	420.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene(total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V131V6FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00028

Matrix: (soil/water) WATER

Lab Sample ID: 3584.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3013

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131V6TB

00035

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3586.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3025

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	0
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene(total)	5.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V131V6TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No. 00036

Matrix: (soil/water) WATER

Lab Sample ID: 3586.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3025

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pack./cap) PACT

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPH 08/11/91

V154V8FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00040

Matrix: (soil/water) WATER

Lab Sample ID: 3588.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3017

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CONCENTRATION UNITS:

(ug/L or ug/kg) UG/L

CAS NO.

COMPOUND

Q

74-87-3	-----Chloromethane	50.	U
74-83-9	-----Bromomethane	50.	U
75-01-4	-----Vinyl Chloride	50.	U
75-00-3	-----Chloroethane	50.	U
75-09-2	-----Methylene Chloride	25.	U
67-64-1	-----Acetone	50.	U
75-15-0	-----Carbon Disulfide	25.	U
75-35-4	-----1,1-Dichloroethene	25.	U
75-34-3	-----1,1-Dichloroethane	25.	U
540-59-0	-----1,2-Dichloroethene (total)	470.	
67-66-3	-----Chloroform	25.	U
107-06-2	-----1,2-Dichloroethane	25.	U
78-93-3	-----2-Butanone	50.	U R
71-55-6	-----1,1,1-Trichloroethane	25.	U
56-23-5	-----Carbon Tetrachloride	25.	U
108-05-4	-----Vinyl Acetate	50.	U
75-27-4	-----Bromodichloromethane	25.	U
78-87-5	-----1,2-Dichloropropane	25.	U
10061-01-5	-----cis-1,3-Dichloropropene	25.	U
79-01-6	-----Trichloroethene	480.	
124-48-1	-----Dibromochloromethane	25.	U
79-00-5	-----1,1,2-Trichloroethane	25.	U
71-43-2	-----Benzene	25.	U
10061-02-6	-----Trans-1,3-Dichloropropene	25.	U
75-25-2	-----Bromoform	25.	U
108-10-1	-----4-Methyl-2-Pentanone	50.	U
591-78-6	-----2-Hexanone	50.	U
127-18-4	-----Tetrachloroethene	25.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	25.	U
108-88-3	-----Toluene	25.	U
108-90-7	-----Chlorobenzene	25.	U
100-41-4	-----Ethylbenzene	25.	U
100-42-5	-----Styrene	25.	U
1330-20-7	-----Xylene(total)	25.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V154V6FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: **00041**

Matrix: (soil/water) WATER

Lab Sample ID: 3588.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63027

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pack/cap) PACE

Dilution Factor: 5.00

CONCENTRATION UNITS:

(ug/L or ug/kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V197V6FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00047

Matrix: (soil/water) WATER

Lab Sample ID: 3587.8

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63026

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pack/cap) PACT

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	1400.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1700.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U R
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	50.	U
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V197V6FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00048

Matrix: (soil/water) WATER

Lab Sample ID: 3587.8

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63026

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

51-18

00121

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3595.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63024

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CONCENTRATION UNITS:

(ug/L or ug/kg) UG/L

0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	
74-87-3	Chloromethane	200.	U
74-83-9	Bromomethane	200.	U
75-01-4	Vinyl Chloride	200.	U
75-00-3	Chloroethane	200.	U
75-09-2	Methylene Chloride	100.	U
67-64-1	Acetone	200.	U
75-15-0	Carbon Disulfide	100.	U
75-35-4	1,1-Dichloroethene	100.	U
75-34-3	1,1-Dichloroethane	100.	U
540-59-0	1,2-Dichloroethene (total)	100.	U
67-66-3	Chloroform	100.	U
107-06-2	1,2-Dichloroethane	100.	U
78-93-3	2-Butanone	200.	U R
71-55-6	1,1,1-Trichloroethane	100.	U
56-23-5	Carbon Tetrachloride	100.	U
108-05-4	Vinyl Acetate	200.	U
75-27-4	Bromodichloromethane	100.	U
78-87-5	1,2-Dichloropropane	100.	U
10061-01-5	cis-1,3-Dichloropropene	100.	U
79-01-6	Trichloroethene	100.	U
124-48-1	Dibromochloromethane	100.	U
79-00-5	1,1,2-Trichloroethane	100.	U
71-43-2	Benzene	100.	U
10061-02-6	Trans-1,3-Dichloropropene	100.	U
75-25-2	Bromoform	100.	U
108-10-1	4-Methyl-2-Pentanone	200.	U
591-78-6	2-Hexanone	200.	U
127-18-4	Tetrachloroethene	3200.	
79-34-5	1,1,2,2-Tetrachloroethane	100.	U
108-88-3	Toluene	100.	U
108-90-7	Chlorobenzene	100.	U
100-41-4	Ethylbenzene	100.	U
100-42-5	Styrene	100.	U
1330-20-7	Xylene (total)	100.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

31-18

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00122

Matrix: (soil/water) WATER

Lab Sample ID: 3595.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63024

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-18TB

00127

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3597.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63059

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACT

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	5.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U R
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U J
10061-02-6	Trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	U J
108-90-7	Chlorobenzene	5.	U J
100-41-4	Ethylbenzene	5.	U J
100-42-5	Styrene	5.	U J
1330-20-7	Xylene (total)	5.	U J

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-18TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00128

Matrix: (soil/water) WATER

Lab Sample ID: 3597.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3059

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SHEET NO.

S4-16

00132

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3602.5

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3069

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack./cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	100.	U
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	50.	U
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	50.	U
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	1600.	
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene(total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

54-16

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00133

Matrix: (soil/water) WATER

Lab Sample ID: 3602.5

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63069

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEMS  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/15/91

Chemical Analyses Performed By  
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

With the exception of the field blank and trip blanks, foaming occurred during sample analyses, especially in Samples S5-13 and S6-18.

Detection limits for aromatic compounds were estimated in UniFirst samples.

Cooler temperature upon receipt of W.R. Grace samples by the laboratory was 5°C; cooler temperature for the UniFirst samples was 12°C. Temperatures outside the 4°C  $\pm$  2°C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Seven samples were collected and submitted to PACE, Inc. on May 15, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
V140V6FS	3581	05/15/91
V140V6FD	3582	05/15/91
V140V6FB	3583	05/15/91
S1-18FB	3598	05/15/91
S5-13	3603	05/15/91
S6-18	3604	05/15/91
S6-18TB	3606	05/15/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

Samples from the W.R. Grace treatment plant were preserved with HCl. Holding times were met for all W.R. Grace samples.

Samples from the UniFirst treatment plant were apparently not preserved. All UniFirst samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all UniFirst samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Peaks were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive sample data were affected.

### **A. Initial**

Initial calibration criteria were met on 5/23/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/24/91 with the exception of the % difference for 1,1,2,2-tetrachloroethane (actual 26.83; criteria 25). Data were not affected.

## **IV. Blanks**

The trip blanks, field blank, and method blanks were clean.

## **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample V140V6FS. The percent recoveries for 1,1-dichloroethene were below QC criteria in the MS and MSD. The relative percent difference was above QC criteria for trichloroethene. No positive results for these compounds were detected, so no data were qualified.

The laboratory quantified the spiking compounds using the average relative response factor from the initial calibration rather than the response factor for the continuing calibration. The results discussed in the preceding paragraph pertain to correctly quantified values.

#### VII. Field Duplicates

Samples V140V6FS and V140V6FD were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53

<u>Compound</u>	<u>MDL (ug/L)</u>
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d <sub>4</sub>	0.50
Toluene-d <sub>8</sub>	0.45
Bromofluorobenzene	0.36

Compounds reported in Sample S5-13 were quantified using the relative response factor from the initial calibration rather than the response factor from the continuing calibration. Correct results are listed below.

<u>Compound</u>	<u>Concentration (ug/L)</u>
1,1-Dichloroethane	2.0
1,1,1-Trichloroethane	25

Spiking compound concentrations were also quantified incorrectly, as discussed in Section VI.

All other results and detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were reported for this sample delivery group.

#### **XII. System Performance**

System performance was acceptable.

00094

UNIFIRST/ENSR

PACE Project Number: 810516513

PACE Sample Number:

95 0036068

Date Collected:

05/15/91

Date Received:

05/16/91

ParameterUnitsMDLS6-18 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND

cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND

1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND

trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND

Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

ws 2/8/91

ws

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



### **XIII. Overall Assessment of Data for a Case**

Compound concentrations were corrected for Sample S5-13 and the MS and MSD.

Detection limits for aromatic compounds were estimated in all UniFirst samples.

W. R. GRACE

PACE Project Number: 810516512

PACE Sample Number:

95 0035819

Date Collected:

05/15/91

Date Received:

05/16/91

ParameterUnitsMDLV140 V6 FSORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

00032 -

W. R. GRACE

PACE Project Number: 810516512

PACE Sample Number:

95 0035827

Date Collected:

05/15/91

Date Received:

05/16/91

ParameterUnitsMDLV140 V6 FDORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810516512

PACE Sample Number:

95 0035835

Date Collected:

05/15/91

Date Received:

05/16/91

ParameterUnitsMDLV140 V6 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00240

UNIFIRST/ENSR

PACE Project Number: 810516513

PACE Sample Number:

95 0035983

Date Collected:

05/15/91

Date Received:

05/16/91

ParameterUnitsMDLS1-18 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND <i>us</i>
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND <i>us</i>
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

*228  
7/9/91*

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00044 -

UNIFIRST/ENSR

PACE Project Number: 810516513

PACE Sample Number:

95 0036033

Date Collected:

05/15/91

Date Received:

05/16/91

ParameterUnitsMDLS5-13ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	2.3 2.0 2.5 1/9/91
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	26.7 25
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND u)
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND u)
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00050

UNIFIRST/ENSR

PACE Project Number: 810516513

PACE Sample Number:

95 0036041

Date Collected:

05/15/91

Date Received:

05/16/91

ParameterUnitsMDLS6-18ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

ug 2LJ 7/9/91

ND uJ

|

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00054

UNIFIRST/ENSR

PACE Project Number: 810516513

PACE Sample Number:

95 0036068

Date Collected:

05/15/91

Date Received:

05/16/91

ParameterUnitsMDLS6-18 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

us 253  
11/9/91

us

ND

|

MDL

Method Detection Limit

ND

Not detected at or above the MDL.





DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
AND RECOVERY WELL SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/15/91 - 5/20/91

Chemical Analyses Performed By  
Aquatec Inc.

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233



## EXECUTIVE SUMMARY

Samples were submitted for both CLP and Method 524.2 analyses. Analytical data for both methods was submitted by the laboratory in a single data package; therefore, this validation report includes both analyses.

The analyte list for Method 524.2 analyses was reduced for the Wells G&H project. However, because of its unfamiliarity with the project, Aquatec analyzed for the full analyte list. For Method 524.2, compounds not being considered in this project were "lined out" on the Form Is submitted with this validation report.

The chain of custody form for samples collected on May 15 does not include the year (i.e., all date entries are "May 15"). This chain of custody form also has incomplete sample custody information.

Cooler temperatures were not recorded by the laboratory upon receipt of samples. Cooler temperatures outside the  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets  
to qualify some of the results.

### Case Narrative

Fifteen samples were collected and submitted to Aquatec Inc. on May 15 through May 20, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses pursuant to the U.S. EPA Contract Laboratory Program.

The samples included for in this Sample Delivery Group (SDG) for CLP analyses are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
15A1	134908	05/15/91
RW-1	134910	05/19/91
RW-2	134911	05/19/91
RW-3	134912	05/19/91
RW-4	134913	05/19/91
RW-5	134914	05/19/91
RW-6	134915	05/18/91
RW-7	134916	05/18/91
RW-8	134917	05/18/91
RW-9	134918	05/18/91
RW-10	134919	05/18/91
V131V11FS	134921	05/20/91
16A1	134923	05/16/91
17A1	134930	05/17/91
18A1	134937	05/18/91

Seven samples were collected and submitted to Aquatec Inc. on May 15, May 16, and May 20, 1991. The laboratory was requested to perform volatile organics (VOA) analyses pursuant to Method 524.2.

The samples included for in this SDG for Method 524.2 analyses are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
15C1	134909	05/15/91
Trip Blank	134920	05/20/91
V140V11FS	134922	05/20/91
16C1	134924	05/16/91
16C2	134925	05/16/91
16C3	134926	05/16/91
16D1	134927	05/16/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## I. Holding Times

According to the chain of custody forms, Samples 15A1, 15C1, 16A1, 17A1, 16C1, 16C2, 16C3, and 16D1 were not preserved with HCl at the time of sample collection. Samples 15A1 and 15C1 were analyzed within the 7-day holding time for unpreserved volatile aqueous samples.

Samples 16A1, 17A1, 16C1, 16C2, 16C3, and 16D1 were analyzed outside the 7-day holding time for unpreserved samples but within the 14-day holding time for volatile aqueous samples. Detection limits for aromatic compounds were qualified as estimated in these six samples.

All other samples were preserved with HCL when collected and were analyzed within the 14-day holding time for preserved samples.

## II. GC/MS Tuning

### A. CLP

GC/MS tuning and mass calibrations were within criteria.

### B. Method 524.2

GC/MS tuning and mass calibrations were within criteria.

## III. Calibration

### A. Initial

#### CLP

Initial calibration criteria were met on 5/29/91 (Instrument OWAC) with the exception of the RRF for vinyl acetate (actual 0.046; criteria 0.1) and the %RSD for acetone (actual 35.0; criteria 30). Detection limits for vinyl acetate were rejected and positive results for acetone were qualified as estimated in Samples RW-10, V131V11FS, RW-2, and RW-2DL.

Initial calibration criteria were met on 5/31/91 (Instrument OWAD) with the exception of the %RSD for methylene chloride (actual 33.6; criteria 30) and acetone (actual 34.7; criteria 30). Positive results for these compounds were qualified as estimated in Samples RW-9, RW-8, RW-5, and RW-8RE.

Initial calibration criteria were met on 5/12/91 (Instrument OWAE) with the exception of the RRF for 2-butanone (actual 0.058;

criteria 0.1). Detection limits for 2-butanone were rejected in Samples 15A1 and 15A1DL.

Initial calibration criteria were met on 5/28/91 (Instrument OWAE) with the exception of the RRF for 2-butanone (actual 0.051; criteria 0.1) and vinyl acetate (actual 0.082). Detection limits for these two compounds were rejected in Samples 17A1, 18A1, 16A1, RW-1, RW-3, RW-4, RW-1DL, RW-4DL, RW-5, and RW-6. Detection limits for vinyl acetate were rejected and positive results for 2-butanone were qualified as estimated in Samples RW-7 and RW-7DL.

Initial calibration criteria were met on 6/1/91 (Instrument OWAE) with the exception of the RRF for 2-butanone (actual 0.052; criteria 0.1). Detection limits for 2-butanone were rejected in Samples RW-2MS and RW-2MSD.

#### Method 524.2

Initial calibration criteria were met on 5/21/91, 5/30/91, and 6/3/91 (Instrument 5100G).

#### **B. Continuing**

##### CLP

Continuing calibration criteria were met on 5/20/91 (Instrument OWAC) and 6/1/91 (Instrument OWAD).

Continuing calibration criteria were met on 5/21/91 (Instrument OWAE) with the exception of the RF for 2-butanone (actual 0.062) and vinyl acetate (actual 0.060). Data were previously qualified.

Continuing calibration criteria were met on 5/29/91 at 01:05 (Instrument OWAE) with the exception of the RF for 2-butanone (actual 0.055) and vinyl acetate (actual 0.067). Data were previously qualified.

Continuing calibration criteria were met on 5/29/91 at 13:23 (Instrument OWAE) with the exception of the RF for 2-butanone (actual 0.050) and vinyl acetate (actual 0.065). Data were previously qualified.

Continuing calibration criteria were met on 5/30/91 (Instrument OWAE) with the exception of the RF for 2-butanone (actual 0.054) and vinyl acetate (0.094) and the % difference for bromomethane (actual 28.3; criteria 25). Data for 2-butanone and vinyl acetate were previously qualified. Other data were not affected.



Method 524.2

Continuing calibration criteria were met on 5/22/91 and 6/3/91 (Instrument 5100G).

**IV. Blanks**

CLP

Acetone and methylene chloride were reported in Method Blanks VBLKV1, VBLKW5, and VBLKU8. Methylene chloride was reported in Method Blanks VBLKQ5, VBLKV6, and VBLKX3. Acetone and methylene chloride results were qualified as less than the reported values in the associated field samples.

Method 524.2

Methylene chloride, trichloroethene, and toluene were reported in Method Blank VBLKR3. Acetone, methylene chloride, trichloroethene, and toluene were reported in Method Blank VBLKR9. Methylene chloride and trichloroethene were reported in Method Blank VBLKV3. Methylene chloride was reported in the trip blank. Results for the above compounds were qualified as less than the reported values in the associated field samples.

No field blanks were submitted with this SDG.

**V. Surrogate Recovery**

CLP

The recovery of toluene-d8 was above QC criteria in Sample RW-8. All positive results and detection limits were qualified as estimated in RW-8.

All other surrogate recoveries were within acceptance criteria.

Method 524.2

Surrogate recoveries were within acceptance criteria.

## **VI. Matrix Spike/Matrix Spike Duplicate**

### CLP

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample RW-2. Results were within acceptance criteria.

### Method 524.2

No MS or MSD were performed for Method 524.2 analyses.

## **VII. Field Duplicates**

No field duplicates were submitted for analysis by either analytical method.

## **VIII. Internal Standards Performance**

### CLP

Internal standards areas and retention times were acceptable.

### Method 524.2

Internal standard areas for fluorobenzene, 1,4-dichlorobenzene-d4, and chlorobenzene-d5 were low in Samples 15C1, 15C1RE, and 16C2. Positive results and detection limits were qualified as estimated in those three samples.

All other internal standards areas and retention times were acceptable.

## **IX. TCL Compound Identification**

TCL compound identifications were acceptable for both analytical methods.

## **X. Compound Quantitation and Reported Detection Limits**

### CLP

Vinyl chloride, 1,2-dichloroethenes, and trichloroethene were detected at concentrations beyond the calibration range of the instrument in Sample 15A1. The sample was rerun at a dilution. Reported results for these three compounds were

rejected in Sample 15A1; results reported for these compounds were acceptable without qualification in Sample 15A1DL.

Vinyl chloride and 1,2-dichloroethenes were detected at concentrations beyond the calibration range of the instrument in Samples RW-1 and RW-2. These samples were rerun at a dilution. Reported results for these two compounds were rejected in Samples RW-1 and RW-2; results reported for these compounds were acceptable without qualification in Samples RW-1DL and RW-2DL.

The compound 2-butanone was detected at a concentration beyond the calibration range of the instrument in Sample RW-7. This sample was rerun at a dilution. The reported result for 2-butanone was rejected in Sample RW-7; the result reported for Sample RW-7DL was acceptable without qualification.

All other results and detection limits were acceptable based on the supporting data.

#### Method 524.2

Results and detection limits were acceptable based on the supporting data.

### **XI. Tentatively Identified Compounds**

#### CLP

Tentatively identified compounds (TICs) were reported in Samples RW-5 (RT 12.75), RW-7 (RT 8.95), RW-8RE (RT 12.75), and 17A1 (RT 8.80). The TIC reported in Sample RW-8RE was rejected because it was not duplicated in Sample RW-8.

#### Method 524.2

TICs were not provided for these analyses.

### **XII. System Performance**

System performance was acceptable for both analytical methods.

### **XIII. Overall Assessment of Data for a Case**

No field blanks, trip blanks, or field duplicates were submitted for CLP analyses. No field blanks or field duplicates were submitted for Method 524.2 analyses, nor were MS/MSD samples requested. Although most surrogate recoveries and internal area counts were acceptable, this data should be used with caution because of the lack of quality control samples.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15A1

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134908

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134908V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/21/91

Column: (pack/cap) PACK

Dilution Factor: 1.0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	480	ER
75-00-3-----	Chloroethane	4	JW
75-09-2-----	Methylene Chloride	5	U
67-64-1-----	Acetone	10	U
75-15-0-----	Carbon Disulfide	5	U
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	870	ER
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	10	U R
71-55-6-----	1,1,1-Trichloroethane	5	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	10	U R
75-27-4-----	Bromodichloromethane	5	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-Dichloropropene	5	U
79-01-6-----	Trichloroethene	530	ER
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	5	U
10061-02-6-----	trans-1,3-Dichloropropene	5	U
75-25-2-----	Bromoform	5	U
108-10-1-----	4-Methyl-2-Pentanone	10	U
591-78-6-----	2-Hexanone	10	U
127-18-4-----	Tetrachloroethene	11	
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	4	J
108-90-7-----	Chlorobenzene	5	U
100-41-4-----	Ethylbenzene	5	U
100-42-5-----	Styrene	5	U
1330-20-7-----	Xylene (total)	5	U

1B  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

15A1

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134908

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134908V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/21/91

Column: (pack/cap) PACK

Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15A1DL

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134908D1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134908DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/21/91

Column: (pack/cap) PACK

Dilution Factor: 5.882

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	59	U
74-83-9-----	Bromomethane	59	U
75-01-4-----	Vinyl Chloride	390	<del>D</del>
75-00-3-----	Chloroethane	59	U
75-09-2-----	Methylene Chloride	17	<del>BJD</del> U
67-64-1-----	Acetone	200	<del>BD</del>
75-15-0-----	Carbon Disulfide	29	U
75-35-4-----	1,1-Dichloroethene	29	U
75-34-3-----	1,1-Dichloroethane	29	U
540-59-0-----	1,2-Dichloroethene (total)	660	<del>D</del>
67-66-3-----	Chloroform	29	U
107-06-2-----	1,2-Dichloroethane	29	U
78-93-3-----	2-Butanone	<del>59</del>	<del>U</del> R
71-55-6-----	1,1,1-Trichloroethane	29	U
56-23-5-----	Carbon Tetrachloride	29	U
108-05-4-----	Vinyl Acetate	<del>59</del>	<del>U</del> R
75-27-4-----	Bromodichloromethane	29	U
78-87-5-----	1,2-Dichloropropane	29	U
10061-01-5-----	cis-1,3-Dichloropropene	29	U
79-01-6-----	Trichloroethene	390	<del>D</del>
124-48-1-----	Dibromochloromethane	29	U
79-00-5-----	1,1,2-Trichloroethane	29	U
71-43-2-----	Benzene	29	U
10061-02-6-----	trans-1,3-Dichloropropene	29	U
75-25-2-----	Bromoform	29	U
108-10-1-----	4-Methyl-2-Pentanone	59	U
591-78-6-----	2-Hexanone	59	U
127-18-4-----	Tetrachloroethene	9	<del>JD</del>
79-34-5-----	1,1,2,2-Tetrachloroethane	29	U
108-88-3-----	Toluene	29	U
108-90-7-----	Chlorobenzene	29	U
100-41-4-----	Ethylbenzene	29	U
100-42-5-----	Styrene	29	U
1330-20-7-----	Xylene (total)	29	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

15A1DL

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134908D1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134908DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/21/91

Column: (pack/cap) PACK

Dilution Factor: 5.882

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-1

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134910

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134910DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 3.472

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	35	U
74-83-9-----	Bromomethane	35	U
75-01-4-----	Vinyl Chloride	2600	R
75-00-3-----	Chloroethane	35	U
75-09-2-----	Methylene Chloride	6	U
67-64-1-----	Acetone	35	U
75-15-0-----	Carbon Disulfide	17	U
75-35-4-----	1,1-Dichloroethene	5	J
75-34-3-----	1,1-Dichloroethane	17	U
540-59-0-----	1,2-Dichloroethene (total)	3900	R
67-66-3-----	Chloroform	17	U
107-06-2-----	1,2-Dichloroethane	17	U
78-93-3-----	2-Butanone	35	R
71-55-6-----	1,1,1-Trichloroethane	17	U
56-23-5-----	Carbon Tetrachloride	17	U
108-05-4-----	Vinyl Acetate	35	R
75-27-4-----	Bromodichloromethane	17	U
78-87-5-----	1,2-Dichloropropane	17	U
10061-01-5-----	cis-1,3-Dichloropropene	17	U
79-01-6-----	Trichloroethene	310	
124-48-1-----	Dibromochloromethane	17	U
79-00-5-----	1,1,2-Trichloroethane	17	U
71-43-2-----	Benzene	17	U
10061-02-6-----	trans-1,3-Dichloropropene	17	U
75-25-2-----	Bromoform	17	U
108-10-1-----	4-Methyl-2-Pentanone	35	U
591-78-6-----	2-Hexanone	35	U
127-18-4-----	Tetrachloroethene	10	J
79-34-5-----	1,1,2,2-Tetrachloroethane	17	U
108-88-3-----	Toluene	220	
108-90-7-----	Chlorobenzene	17	U
100-41-4-----	Ethylbenzene	37	
100-42-5-----	Styrene	17	U
1330-20-7-----	Xylene (total)	36	

1/4 5.1/8 1/2 1/3



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-1

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134910

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134910DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 3.472

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-1DL

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134910D1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134910D2V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 25.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3	Chloromethane	250	U
74-83-9	Bromomethane	250	U
75-01-4	Vinyl Chloride	2200	B
75-00-3	Chloroethane	250	U
75-09-2	Methylene Chloride	45	BAD U
67-64-1	Acetone	250	U
75-15-0	Carbon Disulfide	120	U
75-35-4	1,1-Dichloroethene	120	U
75-34-3	1,1-Dichloroethane	120	U
540-59-0	1,2-Dichloroethene (total)	3600	B
67-66-3	Chloroform	120	U
107-06-2	1,2-Dichloroethane	120	U
78-93-3	2-Butanone	250	U R
71-55-6	1,1,1-Trichloroethane	120	U
56-23-5	Carbon Tetrachloride	120	U
108-05-4	Vinyl Acetate	250	U R
75-27-4	Bromodichloromethane	120	U
78-87-5	1,2-Dichloropropane	120	U
10061-01-5	cis-1,3-Dichloropropene	120	U
79-01-6	Trichloroethene	300	B
124-48-1	Dibromochloromethane	120	U
79-00-5	1,1,2-Trichloroethane	120	U
71-43-2	Benzene	120	U
10061-02-6	trans-1,3-Dichloropropene	120	U
75-25-2	Bromoform	120	U
108-10-1	4-Methyl-2-Pentanone	250	U
591-78-6	2-Hexanone	250	U
127-18-4	Tetrachloroethene	120	U
79-34-5	1,1,2,2-Tetrachloroethane	120	U
108-88-3	Toluene	220	B
108-90-7	Chlorobenzene	120	U
100-41-4	Ethylbenzene	120	U
100-42-5	Styrene	120	U
1330-20-7	Xylene (total)	120	U

Schultz 5/19/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-1DL

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134910D1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134910D2V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 25.0

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: AQUATEC, INC.

Contract: 91000

RW-2

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134911

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C134911DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec \_\_\_\_\_ Date Analyzed: 05/30/91

Column: (pack/cap) PACK Dilution Factor: 2.273

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-87-3-----	Chloromethane	23	U
74-83-9-----	Bromomethane	23	U
75-01-4-----	Vinyl Chloride	<del>820</del> <sup>820</sup>	<del>U</del> <sup>R</sup>
75-00-3-----	Chloroethane	23	U
75-09-2-----	Methylene Chloride	8	<del>U</del> <sup>u</sup>
67-64-1-----	Acetone	13	<del>U</del> <sup>u</sup>
75-15-0-----	Carbon Disulfide	11	U
75-35-4-----	1,1-Dichloroethene	11	U
75-34-3-----	1,1-Dichloroethane	11	U
540-59-0-----	1,2-Dichloroethene (total)	<del>1100</del> <sup>1100</sup>	<del>U</del> <sup>R</sup>
67-66-3-----	Chloroform	11	U
107-06-2-----	1,2-Dichloroethane	11	U
78-93-3-----	2-Butanone	23	U
71-55-6-----	1,1,1-Trichloroethane	11	U
56-23-5-----	Carbon Tetrachloride	11	U
108-05-4-----	Vinyl Acetate	23	<del>U</del> <sup>R</sup>
75-27-4-----	Bromodichloromethane	11	U
78-87-5-----	1,2-Dichloropropane	11	U
10061-01-5-----	cis-1,3-Dichloropropene	11	U
79-01-6-----	Trichloroethene	250	
124-48-1-----	Dibromochloromethane	11	U
79-00-5-----	1,1,2-Trichloroethane	11	U
71-43-2-----	Benzene	11	U
10061-02-6-----	trans-1,3-Dichloropropene	11	U
75-25-2-----	Bromoform	11	U
108-10-1-----	4-Methyl-2-Pentanone	23	U
591-78-6-----	2-Hexanone	23	U
127-18-4-----	Tetrachloroethene	11	J
79-34-5-----	1,1,2,2-Tetrachloroethane	11	U
108-88-3-----	Toluene	6	J
108-90-7-----	Chlorobenzene	3	J
100-41-4-----	Ethylbenzene	11	U
100-42-5-----	Styrene	11	U
1330-20-7-----	Xylene (total)	11	U

L. Schulten 8/18/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-2

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134911

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C134911DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/30/91

Column: (pack/cap) PACK

Dilution Factor: 2.273

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-2DL

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134911D1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C134911D2V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/30/91

Column: (pack/cap) PACK

Dilution Factor: 6.250

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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74-87-3-----	Chloromethane	62	U
74-83-9-----	Bromomethane	62	U
75-01-4-----	Vinyl Chloride	870	
75-00-3-----	Chloroethane	62	U
75-09-2-----	Methylene Chloride	31	BT d
67-64-1-----	Acetone	45	BT d
75-15-0-----	Carbon Disulfide	31	U
75-35-4-----	1,1-Dichloroethene	31	U
75-34-3-----	1,1-Dichloroethane	31	U
540-59-0-----	1,2-Dichloroethene (total)	960	
67-66-3-----	Chloroform	31	U
107-06-2-----	1,2-Dichloroethane	31	U
78-93-3-----	2-Butanone	62	U
71-55-6-----	1,1,1-Trichloroethane	31	U
56-23-5-----	Carbon Tetrachloride	31	U
108-05-4-----	Vinyl Acetate	62	U R
75-27-4-----	Bromodichloromethane	31	U
78-87-5-----	1,2-Dichloropropane	31	U
10061-01-5-----	cis-1,3-Dichloropropene	31	U
79-01-6-----	Trichloroethene	240	
124-48-1-----	Dibromochloromethane	31	U
79-00-5-----	1,1,2-Trichloroethane	31	U
71-43-2-----	Benzene	31	U
10061-02-6-----	trans-1,3-Dichloropropene	31	U
75-25-2-----	Bromoform	31	U
108-10-1-----	4-Methyl-2-Pentanone	62	U
591-78-6-----	2-Hexanone	62	U
127-18-4-----	Tetrachloroethene	10	J
79-34-5-----	1,1,2,2-Tetrachloroethane	31	U
108-88-3-----	Toluene	31	U
108-90-7-----	Chlorobenzene	31	U
100-41-4-----	Ethylbenzene	31	U
100-42-5-----	Styrene	31	U
1330-20-7-----	Xylene (total)	31	U

L. Schults 8/19/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-2DL

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134911D1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C134911D2V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/30/91

Column: (pack/cap) PACK

Dilution Factor: 6.250

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1. _____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____
6. _____	_____	_____	_____	_____
7. _____	_____	_____	_____	_____
8. _____	_____	_____	_____	_____
9. _____	_____	_____	_____	_____
10. _____	_____	_____	_____	_____
11. _____	_____	_____	_____	_____
12. _____	_____	_____	_____	_____
13. _____	_____	_____	_____	_____
14. _____	_____	_____	_____	_____
15. _____	_____	_____	_____	_____
16. _____	_____	_____	_____	_____
17. _____	_____	_____	_____	_____
18. _____	_____	_____	_____	_____
19. _____	_____	_____	_____	_____
20. _____	_____	_____	_____	_____
21. _____	_____	_____	_____	_____
22. _____	_____	_____	_____	_____
23. _____	_____	_____	_____	_____
24. _____	_____	_____	_____	_____
25. _____	_____	_____	_____	_____
26. _____	_____	_____	_____	_____
27. _____	_____	_____	_____	_____
28. _____	_____	_____	_____	_____
29. _____	_____	_____	_____	_____
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-3

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134912

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134912DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 8.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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74-87-3	Chloromethane	80	U
74-83-9	Bromomethane	80	U
75-01-4	Vinyl Chloride	710	
75-00-3	Chloroethane	19	J
75-09-2	Methylene Chloride	17	SR
67-64-1	Acetone	80	U
75-15-0	Carbon Disulfide	40	U
75-35-4	1,1-Dichloroethene	40	U
75-34-3	1,1-Dichloroethane	40	U
540-59-0	1,2-Dichloroethene (total)	1300	
67-66-3	Chloroform	40	U
107-06-2	1,2-Dichloroethane	40	U
78-93-3	2-Butanone	80	SR
71-55-6	1,1,1-Trichloroethane	40	U
56-23-5	Carbon Tetrachloride	40	U
108-05-4	Vinyl Acetate	80	SR
75-27-4	Bromodichloromethane	40	U
78-87-5	1,2-Dichloropropane	40	U
10061-01-5	cis-1,3-Dichloropropene	40	U
79-01-6	Trichloroethene	1300	
124-48-1	Dibromochloromethane	40	U
79-00-5	1,1,2-Trichloroethane	40	U
71-43-2	Benzene	40	U
10061-02-6	trans-1,3-Dichloropropene	40	U
75-25-2	Bromoform	40	U
108-10-1	4-Methyl-2-Pentanone	80	U
591-78-6	2-Hexanone	80	U
127-18-4	Tetrachloroethene	29	J
79-34-5	1,1,2,2-Tetrachloroethane	40	U
108-88-3	Toluene	40	U
108-90-7	Chlorobenzene	40	U
100-41-4	Ethylbenzene	40	U
100-42-5	Styrene	40	U
1330-20-7	Xylene (total)	40	U

C. Schultz 8/19/91



1B  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-3

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134912

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134912DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 8.0

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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## EPA SAMPLE NO.

RW-4

Contract:91000

Lab Sample ID: 134913

Lab File ID: E134913DV

Date Received: 05/21/91

Date Analyzed: 05/29/91

Dilution Factor: 4.292

Q

74-87-3-----Chloromethane	43	U
74-83-9-----Bromomethane	43	U
75-01-4-----Vinyl Chloride	730	
75-00-3-----Chloroethane	13	J
75-09-2-----Methylene Chloride	21	U
67-64-1-----Acetone	43	U
75-15-0-----Carbon Disulfide	21	U
75-35-4-----1,1-Dichloroethene	21	U
75-34-3-----1,1-Dichloroethane	21	U
540-59-0-----1,2-Dichloroethene (total)	1200	
67-66-3-----Chloroform	21	U
107-06-2-----1,2-Dichloroethane	21	U
78-93-3-----2-Butanone	43	U R
71-55-6-----1,1,1-Trichloroethane	21	U
56-23-5-----Carbon Tetrachloride	21	U
108-05-4-----Vinyl Acetate	43	U R
75-27-4-----Bromodichloromethane	21	U
78-87-5-----1,2-Dichloropropane	21	U
10061-01-5-----cis-1,3-Dichloropropene	21	U
79-01-6-----Trichloroethene	360	
124-48-1-----Dibromochloromethane	21	U
79-00-5-----1,1,2-Trichloroethane	21	U
71-43-2-----Benzene	21	U
10061-02-6-----trans-1,3-Dichloropropene	21	U
75-25-2-----Bromoform	21	U
108-10-1-----4-Methyl-2-Pentanone	43	U
591-78-6-----2-Hexanone	43	U
127-18-4-----Tetrachloroethene	7	J
79-34-5-----1,1,2,2-Tetrachloroethane	21	U
108-88-3-----Toluene	21	U
108-90-7-----Chlorobenzene	21	U
100-41-4-----Ethylbenzene	21	U
100-42-5-----Styrene	21	U
1330-20-7-----Xylene (total)	21	U

15/3/85

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-4

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134913

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134913DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 4.292

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-4DL

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134913D1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134913D2V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 8.065

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-87-3-----	Chloromethane	81	U
74-83-9-----	Bromomethane	81	U
75-01-4-----	Vinyl Chloride	670	<del>D</del>
75-00-3-----	Chloroethane	81	U
75-09-2-----	Methylene Chloride	22	<del>BJD</del> u
67-64-1-----	Acetone	81	U
75-15-0-----	Carbon Disulfide	40	U
75-35-4-----	1,1-Dichloroethene	40	U
75-34-3-----	1,1-Dichloroethane	40	U
540-59-0-----	1,2-Dichloroethene (total)	1200	<del>D</del>
67-66-3-----	Chloroform	40	U
107-06-2-----	1,2-Dichloroethane	40	U
78-93-3-----	2-Butanone	81	<del>U</del> R
71-55-6-----	1,1,1-Trichloroethane	40	U
56-23-5-----	Carbon Tetrachloride	40	U
108-05-4-----	Vinyl Acetate	81	<del>U</del> R
75-27-4-----	Bromodichloromethane	40	U
78-87-5-----	1,2-Dichloropropane	40	U
10061-01-5-----	cis-1,3-Dichloropropene	40	U
79-01-6-----	Trichloroethene	340	<del>D</del>
124-48-1-----	Dibromochloromethane	40	U
79-00-5-----	1,1,2-Trichloroethane	40	U
71-43-2-----	Benzene	40	U
10061-02-6-----	trans-1,3-Dichloropropene	40	U
75-25-2-----	Bromoform	40	U
108-10-1-----	4-Methyl-2-Pentanone	81	U
591-78-6-----	2-Hexanone	81	U
127-18-4-----	Tetrachloroethene	40	U
79-34-5-----	1,1,2,2-Tetrachloroethane	40	U
108-88-3-----	Toluene	40	U
108-90-7-----	Chlorobenzene	40	U
100-41-4-----	Ethylbenzene	40	U
100-42-5-----	Styrene	40	U
1330-20-7-----	Xylene (total)	40	U

*L. J. Schultz 8/15/91*

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-4DL

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134913D1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134913D2V

Level: (low/med) LOW

Date Received: 05/21/91

Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 8.065

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====
1.				
2.				
3.				
4.				
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30.				

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-5

Lab Name: AQUATEC, INC. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134914

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D134914D2V

Level: (low/med) LOW Date Received: 05/21/91

Moisture: not dec. \_\_\_\_\_ Date Analyzed: 06/01/91

Column: (pack/cap) PACK Dilution Factor: 4.348

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-87-3-----	Chloromethane	43	U
74-83-9-----	Bromomethane	43	U
75-01-4-----	Vinyl Chloride	46	
75-00-3-----	Chloroethane	43	U
75-09-2-----	Methylene Chloride	5	BU
67-64-1-----	Acetone	43	U
75-15-0-----	Carbon Disulfide	22	U
75-35-4-----	1,1-Dichloroethene	22	U
75-34-3-----	1,1-Dichloroethane	22	U
540-59-0-----	1,2-Dichloroethene (total)	360	
67-66-3-----	Chloroform	22	U
107-06-2-----	1,2-Dichloroethane	22	U
78-93-3-----	2-Butanone	43	U R
71-55-6-----	1,1,1-Trichloroethane	22	U
56-23-5-----	Carbon Tetrachloride	22	U
108-05-4-----	Vinyl Acetate	43	U R
75-27-4-----	Bromodichloromethane	22	U
78-87-5-----	1,2-Dichloropropane	22	U
10061-01-5-----	cis-1,3-Dichloropropene	22	U
79-01-6-----	Trichloroethene	510	
124-48-1-----	Dibromochloromethane	22	U
79-00-5-----	1,1,2-Trichloroethane	22	U
71-43-2-----	Benzene	22	U
10061-02-6-----	trans-1,3-Dichloropropene	22	U
75-25-2-----	Bromoform	22	U
108-10-1-----	4-Methyl-2-Pentanone	43	U
591-78-6-----	2-Hexanone	43	U
127-18-4-----	Tetrachloroethene	13	J
79-34-5-----	1,1,2,2-Tetrachloroethane	22	U
108-88-3-----	Toluene	22	U
108-90-7-----	Chlorobenzene	22	U
100-41-4-----	Ethylbenzene	22	U
100-42-5-----	Styrene	22	U
1330-20-7-----	Xylene (total)	22	U

1/6/87  
J. Schuler 8/12/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-5

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134914

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: D134914D2V

Level: (low/med) LOW

Date Received: 05/21/91

Moisture: not dec. \_\_\_\_\_

Date Analyzed: 06/01/91

Column: (pack/cap) PACK

Dilution Factor: 4.348

Number TICs found: 1

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====
1. 1066-40-6	TRIMETHYLSILANOL	12.75	24	J
2. _____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____
6. _____	_____	_____	_____	_____
7. _____	_____	_____	_____	_____
8. _____	_____	_____	_____	_____
9. _____	_____	_____	_____	_____
10. _____	_____	_____	_____	_____
11. _____	_____	_____	_____	_____
12. _____	_____	_____	_____	_____
13. _____	_____	_____	_____	_____
14. _____	_____	_____	_____	_____
15. _____	_____	_____	_____	_____
16. _____	_____	_____	_____	_____
17. _____	_____	_____	_____	_____
18. _____	_____	_____	_____	_____
19. _____	_____	_____	_____	_____
20. _____	_____	_____	_____	_____
21. _____	_____	_____	_____	_____
22. _____	_____	_____	_____	_____
23. _____	_____	_____	_____	_____
24. _____	_____	_____	_____	_____
25. _____	_____	_____	_____	_____
26. _____	_____	_____	_____	_____
27. _____	_____	_____	_____	_____
28. _____	_____	_____	_____	_____
29. _____	_____	_____	_____	_____
30. _____	_____	_____	_____	_____

000142

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-6

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134915

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134915D2V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 11.628

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	120	U
74-83-9-----	Bromomethane	120	U
75-01-4-----	Vinyl Chloride	720	
75-00-3-----	Chloroethane	34	J
75-09-2-----	Methylene Chloride	24	BU
67-64-1-----	Acetone	120	U
75-15-0-----	Carbon Disulfide	58	U
75-35-4-----	1,1-Dichloroethene	58	U
75-34-3-----	1,1-Dichloroethane	58	U
540-59-0-----	1,2-Dichloroethene (total)	1800	
67-66-3-----	Chloroform	58	U
107-06-2-----	1,2-Dichloroethane	58	U
78-93-3-----	2-Butanone	120	U <sup>2</sup>
71-55-6-----	1,1,1-Trichloroethane	58	U
56-23-5-----	Carbon Tetrachloride	58	U
108-05-4-----	Vinyl Acetate	120	U <sup>2</sup>
75-27-4-----	Bromodichloromethane	58	U
78-87-5-----	1,2-Dichloropropane	58	U
10061-01-5-----	cis-1,3-Dichloropropene	58	U
79-01-6-----	Trichloroethene	660	
124-48-1-----	Dibromochloromethane	58	U
79-00-5-----	1,1,2-Trichloroethane	58	U
71-43-2-----	Benzene	58	U
10061-02-6-----	trans-1,3-Dichloropropene	58	U
75-25-2-----	Bromoform	58	U
108-10-1-----	4-Methyl-2-Pentanone	120	U
591-78-6-----	2-Hexanone	120	U
127-18-4-----	Tetrachloroethene	19	J
79-34-5-----	1,1,2,2-Tetrachloroethane	58	U
108-88-3-----	Toluene	58	U
108-90-7-----	Chlorobenzene	58	U
100-41-4-----	Ethylbenzene	58	U
100-42-5-----	Styrene	58	U
1330-20-7-----	Xylene (total)	58	U

J. Schultz 8/19/91

000155



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-6

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134915

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134915D2V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 11.628

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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28.				
29.				
30.				

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-7

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134916

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134916DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 6.098

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	61	U
74-83-9-----	Bromomethane	61	U
75-01-4-----	Vinyl Chloride	61	U
75-00-3-----	Chloroethane	61	U
75-09-2-----	Methylene Chloride	17	BU
67-64-1-----	Acetone	100	BU
75-15-0-----	Carbon Disulfide	30	U
75-35-4-----	1,1-Dichloroethene	30	U
75-34-3-----	1,1-Dichloroethane	30	U
540-59-0-----	1,2-Dichloroethene (total)	320	
67-66-3-----	Chloroform	30	U
107-06-2-----	1,2-Dichloroethane	30	U
78-93-3-----	2-Butanone	1500	BU R
71-55-6-----	1,1,1-Trichloroethane	30	U
56-23-5-----	Carbon Tetrachloride	30	U
108-05-4-----	Vinyl Acetate	61	U R
75-27-4-----	Bromodichloromethane	30	U
78-87-5-----	1,2-Dichloropropane	30	U
10061-01-5-----	cis-1,3-Dichloropropene	30	U
79-01-6-----	Trichloroethene	540	
124-48-1-----	Dibromochloromethane	30	U
79-00-5-----	1,1,2-Trichloroethane	30	U
71-43-2-----	Benzene	30	U
10061-02-6-----	trans-1,3-Dichloropropene	30	U
75-25-2-----	Bromoform	30	U
108-10-1-----	4-Methyl-2-Pentanone	61	U
591-78-6-----	2-Hexanone	61	U
127-18-4-----	Tetrachloroethene	13	J
79-34-5-----	1,1,2,2-Tetrachloroethane	30	U
108-88-3-----	Toluene	30	U
108-90-7-----	Chlorobenzene	30	U
100-41-4-----	Ethylbenzene	30	U
100-42-5-----	Styrene	30	U
1330-20-7-----	Xylene (total)	30	U

11/5/92  
Schultz 8/15/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-7

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134916

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134916DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 6.098

Number TICs found: 1

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====
1. 109-99-9	TETRAHYDROFURAN	8.95	71	J
2. _____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____
6. _____	_____	_____	_____	_____
7. _____	_____	_____	_____	_____
8. _____	_____	_____	_____	_____
9. _____	_____	_____	_____	_____
10. _____	_____	_____	_____	_____
11. _____	_____	_____	_____	_____
12. _____	_____	_____	_____	_____
13. _____	_____	_____	_____	_____
14. _____	_____	_____	_____	_____
15. _____	_____	_____	_____	_____
16. _____	_____	_____	_____	_____
17. _____	_____	_____	_____	_____
18. _____	_____	_____	_____	_____
19. _____	_____	_____	_____	_____
20. _____	_____	_____	_____	_____
21. _____	_____	_____	_____	_____
22. _____	_____	_____	_____	_____
23. _____	_____	_____	_____	_____
24. _____	_____	_____	_____	_____
25. _____	_____	_____	_____	_____
26. _____	_____	_____	_____	_____
27. _____	_____	_____	_____	_____
28. _____	_____	_____	_____	_____
29. _____	_____	_____	_____	_____
30. _____	_____	_____	_____	_____

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-7DL

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134916D1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134916D2V

Level: (low/med) LOW

Date Received: 05/21/91

\* Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/31/91

Column: (pack/cap) PACK

Dilution Factor: 9.766

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	98	U
74-83-9-----	Bromomethane	98	U
75-01-4-----	Vinyl Chloride	98	U
75-00-3-----	Chloroethane	98	U
75-09-2-----	Methylene Chloride	49	U
67-64-1-----	Acetone	98	U
75-15-0-----	Carbon Disulfide	49	U
75-35-4-----	1,1-Dichloroethene	49	U
75-34-3-----	1,1-Dichloroethane	49	U
540-59-0-----	1,2-Dichloroethene (total)	260	U
67-66-3-----	Chloroform	49	U
107-06-2-----	1,2-Dichloroethane	49	U
78-93-3-----	2-Butanone	1300	U
71-55-6-----	1,1,1-Trichloroethane	49	U
56-23-5-----	Carbon Tetrachloride	49	U
108-05-4-----	Vinyl Acetate	98	U
75-27-4-----	Bromodichloromethane	49	U
78-87-5-----	1,2-Dichloropropane	49	U
10061-01-5-----	cis-1,3-Dichloropropene	49	U
79-01-6-----	Trichloroethene	450	U
124-48-1-----	Dibromochloromethane	49	U
79-00-5-----	1,1,2-Trichloroethane	49	U
71-43-2-----	Benzene	49	U
10061-02-6-----	trans-1,3-Dichloropropene	49	U
75-25-2-----	Bromoform	49	U
108-10-1-----	4-Methyl-2-Pentanone	98	U
591-78-6-----	2-Hexanone	98	U
127-18-4-----	Tetrachloroethene	49	U
79-34-5-----	1,1,2,2-Tetrachloroethane	49	U
108-88-3-----	Toluene	49	U
108-90-7-----	Chlorobenzene	49	U
100-41-4-----	Ethylbenzene	49	U
100-42-5-----	Styrene	49	U
1330-20-7-----	Xylene (total)	49	U

L. Schultz 8/19/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-7DL

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134916D1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134916D2V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/31/91

Column: (pack/cap) PACK

Dilution Factor: 9.766

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====
1. _____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____
6. _____	_____	_____	_____	_____
7. _____	_____	_____	_____	_____
8. _____	_____	_____	_____	_____
9. _____	_____	_____	_____	_____
10. _____	_____	_____	_____	_____
11. _____	_____	_____	_____	_____
12. _____	_____	_____	_____	_____
13. _____	_____	_____	_____	_____
14. _____	_____	_____	_____	_____
15. _____	_____	_____	_____	_____
16. _____	_____	_____	_____	_____
17. _____	_____	_____	_____	_____
18. _____	_____	_____	_____	_____
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20. _____	_____	_____	_____	_____
21. _____	_____	_____	_____	_____
22. _____	_____	_____	_____	_____
23. _____	_____	_____	_____	_____
24. _____	_____	_____	_____	_____
25. _____	_____	_____	_____	_____
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27. _____	_____	_____	_____	_____
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000154

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-8

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134917

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: D134917D2V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 06/01/91

Column: (pack/cap) PACK

Dilution Factor: 2.174

CAS NO.

COMPOUND

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Q

74-87-3-----	Chloromethane	22	UJ
74-83-9-----	Bromomethane	22	UJ
75-01-4-----	Vinyl Chloride	2	J
75-00-3-----	Chloroethane	22	UJ
75-09-2-----	Methylene Chloride	3	BJ UJ
67-64-1-----	Acetone	4	BJ UJ
75-15-0-----	Carbon Disulfide	11	UJ
75-35-4-----	1,1-Dichloroethene	11	U
75-34-3-----	1,1-Dichloroethane	11	U
540-59-0-----	1,2-Dichloroethene (total)	250	J
67-66-3-----	Chloroform	11	U
107-06-2-----	1,2-Dichloroethane	11	U
78-93-3-----	2-Butanone	13	J
71-55-6-----	1,1,1-Trichloroethane	11	UJ
56-23-5-----	Carbon Tetrachloride	11	U
108-05-4-----	Vinyl Acetate	22	U
75-27-4-----	Bromodichloromethane	11	U
78-87-5-----	1,2-Dichloropropane	11	U
10061-01-5-----	cis-1,3-Dichloropropene	11	U
79-01-6-----	Trichloroethene	310	J
124-48-1-----	Dibromochloromethane	11	UJ
79-00-5-----	1,1,2-Trichloroethane	11	U
71-43-2-----	Benzene	11	U
10061-02-6-----	trans-1,3-Dichloropropene	11	U
75-25-2-----	Bromoform	11	U
108-10-1-----	4-Methyl-2-Pentanone	22	U
591-78-6-----	2-Hexanone	22	U
127-18-4-----	Tetrachloroethene	9	J
79-34-5-----	1,1,2,2-Tetrachloroethane	11	UJ
108-88-3-----	Toluene	11	U
108-90-7-----	Chlorobenzene	11	U
100-41-4-----	Ethylbenzene	11	U
100-42-5-----	Styrene	11	U
1330-20-7-----	Xylene (total)	11	U

J. Schults 8/17/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-8

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134917

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: D134917D2V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 06/01/91

Column: (pack/cap) PACK

Dilution Factor: 2.174

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: AQUATEC, INC.

Contract: 91000

RW-8RE

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134917R1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: D134917D3V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 06/01/91

Column: (pack/cap) PACK

Dilution Factor: 2.174

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	22	U
74-83-9	Bromomethane	22	U
75-01-4	Vinyl Chloride	2	J
75-00-3	Chloroethane	22	U
75-09-2	Methylene Chloride	11	U
67-64-1	Acetone	4	U
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	230	
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	12	J
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
108-05-4	Vinyl Acetate	22	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	290	
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	22	U
591-78-6	2-Hexanone	22	U
127-18-4	Tetrachloroethene	8	J
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

24.1  
8/14/91



1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-8RE

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134917R1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: D134917D3V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 06/01/91

Column: (pack/cap) PACK

Dilution Factor: 2.174

Number TICs found: 1

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.1066-40-6	TRIMETHYLSILANOL	12.75	125 R	
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-9

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134918

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: D134918D2V

Level: (low/med) LOW

Date Received: 05/21/91

Moisture: not dec. \_\_\_\_\_

Date Analyzed: 06/01/91

Column: (pack/cap) PACK

Dilution Factor: 1.429

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	14	U
74-83-9-----	Bromomethane	14	U
75-01-4-----	Vinyl Chloride	14	U
75-00-3-----	Chloroethane	14	U
75-09-2-----	Methylene Chloride	3	BSu
67-64-1-----	Acetone	14	U
75-15-0-----	Carbon Disulfide	7	U
75-35-4-----	1,1-Dichloroethene	7	U
75-34-3-----	1,1-Dichloroethane	7	U
540-59-0-----	1,2-Dichloroethene (total)	230	
67-66-3-----	Chloroform	7	U
107-06-2-----	1,2-Dichloroethane	7	U
78-93-3-----	2-Butanone	14	U
71-55-6-----	1,1,1-Trichloroethane	7	U
56-23-5-----	Carbon Tetrachloride	7	U
108-05-4-----	Vinyl Acetate	14	U
75-27-4-----	Bromodichloromethane	7	U
78-87-5-----	1,2-Dichloropropane	7	U
10061-01-5-----	cis-1,3-Dichloropropene	7	U
79-01-6-----	Trichloroethene	160	
124-48-1-----	Dibromochloromethane	7	U
79-00-5-----	1,1,2-Trichloroethane	7	U
71-43-2-----	Benzene	7	U
10061-02-6-----	trans-1,3-Dichloropropene	7	U
75-25-2-----	Bromoform	7	U
108-10-1-----	4-Methyl-2-Pentanone	14	U
591-78-6-----	2-Hexanone	14	U
127-18-4-----	Tetrachloroethene	4	J
79-34-5-----	1,1,2,2-Tetrachloroethane	7	U
108-88-3-----	Toluene	7	U
108-90-7-----	Chlorobenzene	7	U
100-41-4-----	Ethylbenzene	7	U
100-42-5-----	Styrene	7	U
1330-20-7-----	Xylene (total)	7	U

*Handwritten:*  
2/14/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-9

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134918

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: D134918D2V

Level: (low/med) LOW

Date Received: 05/21/91

Moisture: not dec. \_\_\_\_\_

Date Analyzed: 06/01/91

Column: (pack/cap) PACK

Dilution Factor: 1.429

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-10

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134919

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C134919DV

Level: (low/med) LOW

Date Received: 05/21/91

Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/30/91

Column: (pack/cap) PACK

Dilution Factor: 2.5

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-87-3	Chloromethane	25	U
74-83-9	Bromomethane	25	U
75-01-4	Vinyl Chloride	25	U
75-00-3	Chloroethane	25	U
75-09-2	Methylene Chloride	8	BJU
67-64-1	Acetone	14	BJU
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	280	
67-66-3	Chloroform	12	U
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	25	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
108-05-4	Vinyl Acetate	25	U R
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	180	
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
108-10-1	4-Methyl-2-Pentanone	25	U
591-78-6	2-Hexanone	25	U
127-18-4	Tetrachloroethene	6	J
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

*L. Schultz 8/17/91*

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-10

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134919

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C134919DV

Level: (low/med) LOW

Date Received: 05/21/91

Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/30/91

Column: (pack/cap) PACK

Dilution Factor: 2.5

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: AQUATEC, INC.

Contract: 91000

V131 V11 FS

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134921

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C134921DV

Level: (low/med) LOW

Date Received: 05/21/91

Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/30/91

Column: (pack/cap) PACK

Dilution Factor: 5.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-87-3	-----Chloromethane	50	U
74-83-9	-----Bromomethane	50	U
75-01-4	-----Vinyl Chloride	340	
75-00-3	-----Chloroethane	50	U
75-09-2	-----Methylene Chloride	23	BU U
67-64-1	-----Acetone	30	BU J
75-15-0	-----Carbon Disulfide	25	U
75-35-4	-----1,1-Dichloroethene	25	U
75-34-3	-----1,1-Dichloroethane	25	U
540-59-0	-----1,2-Dichloroethene (total)	660	
67-66-3	-----Chloroform	25	U
107-06-2	-----1,2-Dichloroethane	25	U
78-93-3	-----2-Butanone	50	U
71-55-6	-----1,1,1-Trichloroethane	25	U
56-23-5	-----Carbon Tetrachloride	25	U
108-05-4	-----Vinyl Acetate	50	U R
75-27-4	-----Bromodichloromethane	25	U
78-87-5	-----1,2-Dichloropropane	25	U
10061-01-5	-----cis-1,3-Dichloropropene	25	U
79-01-6	-----Trichloroethene	460	
124-48-1	-----Dibromochloromethane	25	U
79-00-5	-----1,1,2-Trichloroethane	25	U
71-43-2	-----Benzene	25	U
10061-02-6	-----trans-1,3-Dichloropropene	25	U
75-25-2	-----Bromoform	25	U
108-10-1	-----4-Methyl-2-Pentanone	50	U
591-78-6	-----2-Hexanone	50	U
127-18-4	-----Tetrachloroethene	12	J
79-34-5	-----1,1,2,2-Tetrachloroethane	25	U
108-88-3	-----Toluene	9	J
108-90-7	-----Chlorobenzene	25	U
100-41-4	-----Ethylbenzene	25	U
100-42-5	-----Styrene	25	U
1330-20-7	-----Xylene (total)	25	U

*L. Schultz 8/14/91*

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V131 V11 FS

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134921

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C134921DV

Level: (low/med) LOW

Date Received: 05/21/91

Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/30/91

Column: (pack/cap) PACK

Dilution Factor: 5.0

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16A1

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134923

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134923DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 4.292

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	43	U
74-83-9-----	Bromomethane	43	U
75-01-4-----	Vinyl Chloride	280	
75-00-3-----	Chloroethane	43	U
75-09-2-----	Methylene Chloride	5	8U
67-64-1-----	Acetone	43	U
75-15-0-----	Carbon Disulfide	21	U
75-35-4-----	1,1-Dichloroethene	21	U
75-34-3-----	1,1-Dichloroethane	21	U
540-59-0-----	1,2-Dichloroethene (total)	630	
67-66-3-----	Chloroform	21	U
107-06-2-----	1,2-Dichloroethane	21	U
78-93-3-----	2-Butanone	43	U R
71-55-6-----	1,1,1-Trichloroethane	21	U
56-23-5-----	Carbon Tetrachloride	21	U
108-05-4-----	Vinyl Acetate	43	U R
75-27-4-----	Bromodichloromethane	21	U
78-87-5-----	1,2-Dichloropropane	21	U
10061-01-5-----	cis-1,3-Dichloropropene	21	U
79-01-6-----	Trichloroethene	330	
124-48-1-----	Dibromochloromethane	21	U
79-00-5-----	1,1,2-Trichloroethane	21	U
71-43-2-----	Benzene	21	U J
10061-02-6-----	trans-1,3-Dichloropropene	21	U
75-25-2-----	Bromoform	21	U
108-10-1-----	4-Methyl-2-Pentanone	43	U
591-78-6-----	2-Hexanone	43	U
127-18-4-----	Tetrachloroethene	10	J
79-34-5-----	1,1,2,2-Tetrachloroethane	21	U
108-88-3-----	Toluene	21	U J
108-90-7-----	Chlorobenzene	21	U J
100-41-4-----	Ethylbenzene	21	U J
100-42-5-----	Styrene	21	U J
1330-20-7-----	Xylene (total)	21	U J

K. Schultz 8/17/91



1B  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

16A1

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134923

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134923DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 4.292

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17A1

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134930

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134930DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 3.333

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-87-3-----	Chloromethane	33	U
74-83-9-----	Bromomethane	33	U
75-01-4-----	Vinyl Chloride	250	
75-00-3-----	Chloroethane	33	U
75-09-2-----	Methylene Chloride	4	<i>7u</i>
67-64-1-----	Acetone	6	J
75-15-0-----	Carbon Disulfide	17	U
75-35-4-----	1,1-Dichloroethene	17	U
75-34-3-----	1,1-Dichloroethane	17	U
540-59-0-----	1,2-Dichloroethene (total)	560	
67-66-3-----	Chloroform	17	U
107-06-2-----	1,2-Dichloroethane	17	U
78-93-3-----	2-Butanone	<del>33</del>	<i>8p</i>
71-55-6-----	1,1,1-Trichloroethane	17	U
56-23-5-----	Carbon Tetrachloride	17	U
108-05-4-----	Vinyl Acetate	<del>33</del>	<i>8p</i>
75-27-4-----	Bromodichloromethane	17	U
78-87-5-----	1,2-Dichloropropane	17	U
10061-01-5-----	cis-1,3-Dichloropropene	17	U
79-01-6-----	Trichloroethene	320	
124-48-1-----	Dibromochloromethane	17	U
79-00-5-----	1,1,2-Trichloroethane	17	U
71-43-2-----	Benzene	17	UJ
10061-02-6-----	trans-1,3-Dichloropropene	17	U
75-25-2-----	Bromoform	17	U
108-10-1-----	4-Methyl-2-Pentanone	33	U
591-78-6-----	2-Hexanone	33	U
127-18-4-----	Tetrachloroethene	9	J
79-34-5-----	1,1,2,2-Tetrachloroethane	17	U
108-88-3-----	Toluene	4	J
108-90-7-----	Chlorobenzene	17	UJ
100-41-4-----	Ethylbenzene	17	UJ
100-42-5-----	Styrene	17	UJ
1330-20-7-----	Xylene (total)	17	UJ

*R. Schmitt 8/17/91*

1B  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

17A1

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134930

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134930DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 3.333

Number TICs found: 1

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====
1.109-99-9	TETRAHYDROFURAN	8.80	200	J
2.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

18A1

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134937

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134937DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 3.333

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) G/L	Q
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74-87-3	-----Chloromethane	33	U
74-83-9	-----Bromomethane	33	U
75-01-4	-----Vinyl Chloride	240	
75-00-3	-----Chloroethane	33	U
75-09-2	-----Methylene Chloride	3	8U
67-64-1	-----Acetone	33	U
75-15-0	-----Carbon Disulfide	17	U
75-35-4	-----1,1-Dichloroethene	17	U
75-34-3	-----1,1-Dichloroethane	17	U
540-59-0	-----1,2-Dichloroethene (total)	550	
67-66-3	-----Chloroform	17	U
107-06-2	-----1,2-Dichloroethane	17	U
78-93-3	-----2-Butanone	33	8U
71-55-6	-----1,1,1-Trichloroethane	17	U
56-23-5	-----Carbon Tetrachloride	17	U
108-05-4	-----Vinyl Acetate	33	8U
75-27-4	-----Bromodichloromethane	17	U
78-87-5	-----1,2-Dichloropropane	17	U
10061-01-5	-----cis-1,3-Dichloropropene	17	U
79-01-6	-----Trichloroethene	370	
124-48-1	-----Dibromochloromethane	17	U
79-00-5	-----1,1,2-Trichloroethane	17	U
71-43-2	-----Benzene	17	U
10061-02-6	-----trans-1,3-Dichloropropene	17	U
75-25-2	-----Bromoform	17	U
108-10-1	-----4-Methyl-2-Pentanone	33	U
591-78-6	-----2-Hexanone	33	U
127-18-4	-----Tetrachloroethene	11	J
79-34-5	-----1,1,2,2-Tetrachloroethane	17	U
108-88-3	-----Toluene	8	J
108-90-7	-----Chlorobenzene	17	U
100-41-4	-----Ethylbenzene	17	U
100-42-5	-----Styrene	17	U
1330-20-7	-----Xylene (total)	17	U

L. Schultz 8/19/91

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

18A1

Lab Name: AQUATEC, INC.

Contract: 91000

Lab Code: AQUAI

Case No.: 26425

SAS No.: \_\_\_\_\_

SDG No.: 15A1

Matrix: (soil/water) WATER

Lab Sample ID: 134937

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E134937DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 3.333

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15C1

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.:            SDG No.: 15A1

Matrix: (soil/water) Water Lab Sample ID: 134909

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134909V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/21/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	<del>0.5</del>	<del>U</del>
74-87-3	<del>Chloromethane</del>	<del>0.5</del>	<del>U</del>
75-01-4	Vinyl Chloride	0.5	UJ
74-83-9	<del>Bromomethane</del>	<del>0.5</del>	<del>U</del>
75-00-3	Chloroethane	0.9	J
75-69-4	<del>Trichlorofluoromethane</del>	<del>0.5</del>	<del>U</del>
75-35-4	1,1-Dichloroethene	0.5	UJ
75-15-0	<del>Carbon Disulfide</del>	<del>0.5</del>	<del>U</del>
67-64-1	<del>Acetone</del>	<del>5</del>	<del>U</del>
75-09-2	Methylene Chloride	0.5	UJ
156-60-5	trans-1,2-Dichloroethene	0.5	UJ
75-34-3	1,1-Dichloroethane	0.5	UJ
590-20-7	<del>2,3-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
156-59-4	cis-1,2-Dichloroethene	0.5	UJ
74-97-5	<del>Bromochloromethane</del>	<del>0.5</del>	<del>U</del>
67-66-3	Chloroform	0.5	UJ
71-55-6	1,1,1-Trichloroethane	0.5	UJ
56-23-5	Carbon Tetrachloride	0.5	UJ
78-93-3	<del>2-Butanone</del>	<del>5</del>	<del>U</del>
563-58-6	<del>1,1-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
71-43-2	Benzene	0.5	UJ
107-06-2	1,2-Dichloroethane	0.5	UJ
79-01-6	Trichloroethene	0.8	BUT
78-87-5	1,2-Dichloropropane	0.5	UJ
74-95-3	<del>Dibromomethane</del>	<del>0.5</del>	<del>U</del>
75-27-4	Bromodichloromethane	0.5	UJ
10061-01-5	cis-1,3-Dichloropropene	0.5	UJ
108-88-3	Toluene	0.5	UJ
10061-02-6	trans-1,3-Dichloropropene	0.5	UJ
108-10-1	<del>4-Methyl-2-Pentanone</del>	<del>5</del>	<del>U</del>
79-00-5	1,1,2-Trichloroethane	0.5	UJ
127-18-4	Tetrachloroethene	0.5	UJ

## VOLATILE ORGANICS ANALYSIS DATA SHEET

15C1

Lab Name: Aquatec, Inc. Contract: 91000Lab Code: AQUAI Case No.: 26425 SAS No.:          SDG No.: 15A1Matrix: (soil/water) Water Lab Sample ID: 134909Sample wt/vol: 25 (g/mL) mL Lab File ID: G134909VLevel: (low/med) LOW Date Received: 05/21/91Date Analyzed: 05/21/91Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9	<del>1,2-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	Dibromochloromethane	0.5	UJ
106-93-4	<del>1,2-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>2-Hexanone</del>	<del>5</del>	<del>U</del>
108-90-7	Chlorobenzene	0.5	UJ
630-20-6	<del>1,1,1,3-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	Ethylbenzene	0.5	UJ
1330-20-7	Xylene (total)	0.5	UJ
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	Bromoform	0.5	UJ
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,2,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	1,1,2,2-Tetrachloroethane	0.5	UJ
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	<del>o-Chlorotoluene</del>	<del>0.5</del>	<del>U</del>
106-43-4	<del>4-Chlorotoluene</del>	<del>0.5</del>	<del>U</del>
108-67-8	<del>1,2,5-Trimethylbenzene</del>	<del>0.5</del>	<del>U</del>
98-06-6	<del>tert-Butylbenzene</del>	<del>0.5</del>	<del>U</del>
95-63-6	<del>1,2,4-Trimethylbenzene</del>	<del>0.5</del>	<del>U</del>
135-98-8	<del>sec-Butylbenzene</del>	<del>0.5</del>	<del>U</del>
541-73-1	<del>1,3-Dichlorobenzene</del>	<del>0.5</del>	<del>U</del>
106-46-7	<del>1,4-Dichlorobenzene</del>	<del>0.5</del>	<del>U</del>
99-87-6	<del>4-Isopropyltoluene</del>	<del>0.5</del>	<del>U</del>
95-50-1	<del>1,2-Dichlorobenzene</del>	<del>0.5</del>	<del>U</del>
104-51-8	<del>n-Butylbenzene</del>	<del>0.5</del>	<del>U</del>
96-12-8	<del>1,3-Dibromo-3-chloropropane</del>	<del>0.5</del>	<del>U</del>
120-82-1	<del>1,2,4-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>
91-20-3	<del>Naphthalene</del>	<del>0.5</del>	<del>U</del>
87-68-3	<del>Hexachlorobutadiene</del>	<del>0.5</del>	<del>U</del>
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

FORM I VOA-2

000573

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15C1RE

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.:            SDG No.: 15A1

Matrix: (soil/water) Water Lab Sample ID: 134909R1

Sample wt/vol: 25 (g/mL) mL Lab File ID: -G134909I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/22/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	<del>0.5</del>	<del>U</del>
74-87-3	<del>Chloromethane</del>	<del>0.5</del>	<del>U</del>
75-01-4	Vinyl Chloride	0.5	UJ
74-83-9	<del>Bromomethane</del>	<del>0.5</del>	<del>U</del>
75-00-3	Chloroethane	1	J
75-69-4	<del>Trichlorofluoromethane</del>	<del>0.5</del>	<del>U</del>
75-35-4	1,1-Dichloroethene	0.5	UJ
75-15-0	<del>Carbon Disulfide</del>	<del>0.5</del>	<del>U</del>
67-64-1	<del>Acetone</del>	<del>5</del>	<del>U</del>
75-09-2	Methylene Chloride	2	B UJ
156-60-5	trans-1,2-Dichloroethene	0.5	UJ
75-34-3	1,1-Dichloroethane	0.5	UJ
590-20-7	<del>2,2-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
156-59-4	cis-1,2-Dichloroethene	0.5	UJ
74-97-5	<del>Bromochloromethane</del>	<del>0.5</del>	<del>U</del>
67-66-3	Chloroform	0.5	UJ
71-55-6	1,1,1-Trichloroethane	0.2	J
56-23-5	Carbon Tetrachloride	0.5	UJ
78-93-3	<del>2-Butanone</del>	<del>5</del>	<del>U</del>
563-58-6	<del>1,1-Dichloropropene</del>	<del>0.5</del>	<del>U</del>
71-43-2	Benzene	0.5	UJ
107-06-2	1,2-Dichloroethane	0.5	UJ
79-01-6	Trichloroethene	0.4	JB UJ
78-87-5	1,2-Dichloropropane	0.5	UJ
74-95-3	<del>Dibromomethane</del>	<del>0.5</del>	<del>U</del>
75-27-4	Bromodichloromethane	0.5	UJ
10061-01-5	cis-1,3-Dichloropropene	0.5	UJ
108-88-3	Toluene	4	B J
10061-02-6	trans-1,3-Dichloropropene	0.5	UJ
108-10-1	<del>4-Methyl-2-Pentanone</del>	<del>5</del>	<del>U</del>
79-00-5	1,1,2-Trichloroethane	0.5	UJ
127-18-4	Tetrachloroethene	0.5	UJ

FORM I VOA ,

000557



524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15C1RE

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.:            SDG No.: 15A1

Matrix: (soil/water) Water Lab Sample ID: 134909R1

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134909I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/22/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9	<del>1,2-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	<del>Dibromochloromethane</del>	<del>0.5</del>	<del>U</del>
106-93-4	<del>1,2-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>2-Hexanone</del>	<del>0.5</del>	<del>U</del>
108-90-7	<del>Chlorobenzene</del>	<del>0.5</del>	<del>U</del>
630-20-6	<del>1,1,1,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	<del>Ethylbenzene</del>	<del>0.5</del>	<del>U</del>
1330-20-7	<del>Xylene (total)</del>	<del>0.5</del>	<del>U</del>
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	<del>Bromoform</del>	<del>0.5</del>	<del>U</del>
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,2,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	<del>1,1,2,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	<del>o-Chlorotoluene</del>	<del>0.5</del>	<del>U</del>
106-43-4	<del>p-Chlorotoluene</del>	<del>0.5</del>	<del>U</del>
108-67-8	<del>1,3,5-Trimethylbenzene</del>	<del>0.5</del>	<del>U</del>
98-06-6	<del>tert-Butylbenzene</del>	<del>0.5</del>	<del>U</del>
95-63-6	<del>1,3,4-Trimethylbenzene</del>	<del>0.5</del>	<del>U</del>
135-98-8	<del>sec-Butylbenzene</del>	<del>0.5</del>	<del>U</del>
541-73-1	<del>1,3-Dichlorobenzene</del>	<del>0.5</del>	<del>U</del>
106-46-7	<del>1,4-Dichlorobenzene</del>	<del>0.5</del>	<del>U</del>
99-87-6	<del>4-Isopropyltoluene</del>	<del>0.5</del>	<del>U</del>
95-50-1	<del>1,2-Dichlorobenzene</del>	<del>0.5</del>	<del>U</del>
104-51-8	<del>n-Butylbenzene</del>	<del>0.5</del>	<del>U</del>
96-12-8	<del>1,2-Dibromo-3-chloropropane</del>	<del>0.5</del>	<del>U</del>
120-82-1	<del>1,2,4-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>
91-20-3	<del>Naphthalene</del>	<del>0.5</del>	<del>U</del>
87-68-3	<del>Hexachlorobutadiene</del>	<del>0.5</del>	<del>U</del>
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15C1RE1

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.:            SDG No.: 15A1

Matrix: (soil/water) Water Lab Sample ID: 134909R2

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134909OV

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/22/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8-----	Dichlorodifluoromethane		
74-87-3-----	Chloromethane		
75-01-4-----	Vinyl Chloride		
74-83-9-----	Bromomethane		
75-00-3-----	Chloroethane	1	
75-69-4-----	Trichlorofluoromethane		
75-35-4-----	1,1-Dichloroethene		
75-15-0-----	Carbon Disulfide		
67-64-1-----	Acetone		
75-09-2-----	Methylene Chloride		
156-60-5-----	trans-1,2-Dichloroethene		
75-34-3-----	1,1-Dichloroethane	0.2	J
590-20-7-----	2,2-Dichloropropane		
156-59-4-----	cis-1,2-Dichloroethene		
74-97-5-----	Bromochloromethane		
67-66-3-----	Chloroform		
71-55-6-----	1,1,1-Trichloroethane	0.4	J
56-23-5-----	Carbon Tetrachloride		
78-93-3-----	2-Butanone		
563-58-6-----	1,1-Dichloropropene		
71-43-2-----	Benzene		
107-06-2-----	1,2-Dichloroethane		
79-01-6-----	Trichloroethene	0.2	BJ
78-87-5-----	1,2-Dichloropropane		
74-95-3-----	Dibromomethane		
75-27-4-----	Bromodichloromethane		
10061-01-5-----	cis-1,3-Dichloropropene		
108-88-3-----	Toluene		
10061-02-6-----	trans-1,3-Dichloropropene		
108-10-1-----	4-Methyl-2-Pentanone		
79-00-5-----	1,1,2-Trichloroethane		
127-18-4-----	Tetrachloroethene		

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15C1RE1

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.:            SDG No.: 15A1

Matrix: (soil/water) Water Lab Sample ID: 134909R2

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134909OV

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/22/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9-----	1,3-Dichloropropane		
124-48-1-----	Dibromochloromethane		
106-93-4-----	1,2-Dibromoethane		
591-78-6-----	2-Hexanone		
108-90-7-----	Chlorobenzene		
630-20-6-----	1,1,1,2-Tetrachloroethane		
100-41-4-----	Ethylbenzene		
1330-20-7-----	Xylene (total)		
100-42-5-----	Styrene		
75-25-2-----	Bromoform		
98-82-8-----	Isopropylbenzene		
108-86-1-----	Bromobenzene		
96-18-4-----	1,2,3-Trichloropropane		
79-34-5-----	1,1,2,2-Tetrachloroethane		
103-65-1-----	n-Propylbenzene		
95-49-8-----	2-Chlorotoluene		
106-43-4-----	4-Chlorotoluene		
108-67-8-----	1,3,5-Trimethylbenzene		
98-06-6-----	tert-Butylbenzene		
95-63-6-----	1,2,4-Trimethylbenzene		
135-98-8-----	sec-Butylbenzene		
541-73-1-----	1,3-Dichlorobenzene		
106-46-7-----	1,4-Dichlorobenzene		
99-87-6-----	4-Isopropyltoluene		
95-50-1-----	1,2-Dichlorobenzene		
104-51-8-----	n-Butylbenzene		
96-12-8-----	1,2-Dibromo-3-chloropropane		
120-82-1-----	1,2,4-Trichlorobenzene		
91-20-3-----	Naphthalene		
87-68-3-----	Hexachlorobutadiene		
87-61-6-----	1,2,3-Trichlorobenzene		

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP BLANK

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.:            SDG No.: 15A1

Matrix: (soil/water) Water Lab Sample ID: 134920

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134920I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 06/03/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	0.5	U
74-87-3	<del>Chloromethane</del>	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	<del>Bromomethane</del>	0.5	U
75-00-3	Chloroethane	0.5	U
75-69-4	<del>Trichlorofluoromethane</del>	0.5	U
75-35-4	1,1-Dichloroethene	0.5	U
75-15-0	<del>Carbon Disulfide</del>	0.5	U
67-64-1	<del>Acetone</del>	5	U
75-09-2	Methylene Chloride	1	B
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
590-20-7	<del>2,2-Dichloropropane</del>	0.5	U
156-59-4	cis-1,2-Dichloroethene	0.5	U
74-97-5	<del>Bromochloromethane</del>	0.5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
78-93-3	<del>2-Butanone</del>	5	U
563-58-6	<del>1,1-Dichloropropene</del>	0.5	U
71-43-2	Benzene	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
79-01-6	Trichloroethene	0.2	J
78-87-5	1,2-Dichloropropane	0.5	U
74-95-3	<del>Dibromomethane</del>	0.5	U
75-27-4	Bromodichloromethane	0.5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
108-10-1	<del>4-Methyl-2-Pentanone</del>	5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.5	U

FORM I VOA

000627

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP BLANK

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.:            SDG No.: 15A1

Matrix: (soil/water) Water Lab Sample ID: 134920

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134920I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 06/03/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9	<del>1,2-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	Dibromochloromethane	0.5	U
106-93-4	<del>1,2-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>3-Hexanone</del>	<del>0.5</del>	<del>U</del>
108-90-7	Chlorobenzene	0.5	U
630-20-6	<del>1,1,1,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	Bromoform	0.5	U
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,2,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	<del>1,1,2,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	<del>2-Chlorotoluene</del>	<del>0.5</del>	<del>U</del>
106-43-4	<del>4-Chlorotoluene</del>	<del>0.5</del>	<del>U</del>
108-67-8	<del>1,2,5-Trimethylbenzene</del>	<del>0.5</del>	<del>U</del>
98-06-6	<del>tert-Butylbenzene</del>	<del>0.5</del>	<del>U</del>
95-63-6	<del>1,3,4-Trimethylbenzene</del>	<del>0.5</del>	<del>U</del>
135-98-8	<del>sec-Butylbenzene</del>	<del>0.5</del>	<del>U</del>
541-73-1	<del>1,2-Dichlorobenzene</del>	<del>0.5</del>	<del>U</del>
106-46-7	<del>2,4-Dichlorobenzene</del>	<del>0.5</del>	<del>U</del>
99-87-6	<del>4-Isopropyltoluene</del>	<del>0.5</del>	<del>U</del>
95-50-1	<del>1,2-Dichlorobenzene</del>	<del>0.5</del>	<del>U</del>
104-51-8	<del>n-Butylbenzene</del>	<del>0.5</del>	<del>U</del>
96-12-8	<del>1,2-Dibromo-3-chloropropane</del>	<del>0.5</del>	<del>U</del>
120-82-1	<del>1,2,4-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>
91-20-3	<del>Naphthalene</del>	<del>0.5</del>	<del>U</del>
87-68-3	<del>Hexachlorobutadiene</del>	<del>0.5</del>	<del>U</del>
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

FORM I VOA-2

000625

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V140 VII FS

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.:            SDG No.: 15A1

Matrix: (soil/water) Water Lab Sample ID: 134922

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134922I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 06/03/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	0.5	U
74-87-3	<del>Chloromethane</del>	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	<del>Bromomethane</del>	0.5	U
75-00-3	Chloroethane	0.5	U
75-69-4	<del>Trichlorofluoromethane</del>	0.5	U
75-35-4	1,1-Dichloroethene	0.5	U
75-15-0	<del>Carbon Disulfide</del>	0.5	U
67-64-1	<del>Acetone</del>	5	U
75-09-2	Methylene Chloride	1	B U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
590-20-7	<del>2,2-Dichloropropane</del>	0.5	U
156-59-4	cis-1,2-Dichloroethene	0.5	U
74-97-5	<del>Bromochloromethane</del>	0.5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
78-93-3	<del>2-Butanone</del>	5	U
563-58-6	<del>1,1-Dichloropropene</del>	0.5	U
71-43-2	Benzene	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
79-01-6	Trichloroethene	0.3	B U
78-87-5	1,2-Dichloropropane	0.5	U
74-95-3	<del>Dibromomethane</del>	0.5	U
75-27-4	Bromodichloromethane	0.5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
108-10-1	<del>4 Methyl 2 Pentanone</del>	5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.5	U

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V140 VII FS

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.:            SDG No.: 15A1

Matrix: (soil/water) Water Lab Sample ID: 134922

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134922I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 06/03/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9	<del>1,3-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	Dibromochloromethane	0.5	U
106-93-4	<del>1,3-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>2-Hexanone</del>	<del>5</del>	<del>U</del>
108-90-7	Chlorobenzene	0.5	U
630-20-6	<del>1,1,1,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	Bromoform	0.5	U
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,2,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	2-Chlorotoluene	0.5	U
106-43-4	4-Chlorotoluene	0.5	U
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
135-98-8	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	U
106-46-7	1,4-Dichlorobenzene	0.5	U
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzene	0.5	U
104-51-8	n-Butylbenzene	0.5	U
96-12-8	1,2-Dibromo-2-chloropropane	0.5	U
120-82-1	1,2,4-Trichlorobenzene	0.5	U
91-20-3	Naphthalene	0.5	U
87-68-3	Hexachlorobutadiene	0.5	U
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16C1

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.:            SDG No.: 15A1

Matrix: (soil/water) Water Lab Sample ID: 134924

Sample wt/vol: 25 (g/mL) mL Lab File ID: G124924I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/30/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	0.5	U
74-87-3	<del>Chloromethane</del>	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	<del>Bromomethane</del>	0.5	U
75-00-3	Chloroethane	0.5	U
75-69-4	<del>Trichlorofluoromethane</del>	0.5	U
75-35-4	1,1-Dichloroethene	0.5	U
75-15-0	<del>Carbon Disulfide</del>	0.5	U
67-64-1	<del>Acetone</del>	0.5	U
75-09-2	Methylene Chloride	0.5	BJU
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
590-20-7	<del>2,2-Dichloropropane</del>	0.5	U
156-59-4	cis-1,2-Dichloroethene	0.5	U
74-97-5	<del>Bromoethane</del>	0.5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
78-93-3	<del>2-Butanone</del>	0.5	U
563-58-6	<del>2,2-Dichloropropane</del>	0.5	U
71-43-2	Benzene	0.5	UJ
107-06-2	1,2-Dichloroethane	0.5	U
79-01-6	Trichloroethene	0.2	BJU
78-87-5	1,2-Dichloropropane	0.5	U
74-95-3	<del>Dibromomethane</del>	0.5	U
75-27-4	Bromodichloromethane	0.5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	UJ
10061-02-6	trans-1,3-Dichloropropene	0.5	U
108-10-1	<del>4-Methyl-2-Pentanone</del>	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.5	U



524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16C1

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.:            SDG No.: 15A1

Matrix: (soil/water) Water Lab Sample ID: 134924

Sample wt/vol: 25 (g/mL) mL Lab File ID: G124924I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/30/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9	<del>1,3-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	Dibromochloromethane	0.5	U
106-93-4	<del>1,2-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>2-Hexanone</del>	<del>5</del>	<del>U</del>
108-90-7	Chlorobenzene	0.5	UJ
630-20-6	<del>1,1,1,3-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	Ethylbenzene	0.5	UJ
1330-20-7	Xylene (total)	0.5	UJ
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	Bromoform	0.5	U
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,3,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	2-Chlorotoluene	0.5	U
106-43-4	4-Chlorotoluene	0.5	U
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
135-98-8	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	U
106-46-7	1,4-Dichlorobenzene	0.5	U
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzene	0.5	U
104-51-8	n-Butylbenzene	0.5	U
96-12-8	1,2-Dibromo-2-chloropropane	0.5	U
120-82-1	1,2,4-Trichlorobenzene	0.5	U
91-20-3	Naphthalene	0.5	U
87-68-3	Hexachlorobutadiene	0.5	U
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

FORM I VOA-2

000055

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16C2

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.:          SDG No.: 15A1

Matrix: (soil/water) Water Lab Sample ID: 134925

Sample wt/vol: 25 (g/mL) mL Lab File ID: G124925I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/30/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	<del>0.5</del>	<del>U</del>
74-87-3	<del>Chloromethane</del>	<del>0.5</del>	<del>U</del>
75-01-4	Vinyl Chloride	0.5	UJ
74-83-9	<del>Bromomethane</del>	<del>0.5</del>	<del>U</del>
75-00-3	Chloroethane	0.5	UJ
75-69-4	<del>Trichlorofluoromethane</del>	<del>0.5</del>	<del>U</del>
75-35-4	1,1-Dichloroethene	0.5	UJ
75-15-0	<del>Carbon Disulfide</del>	<del>0.5</del>	<del>U</del>
67-64-1	<del>Acetone</del>	<del>5</del>	<del>U</del>
75-09-2	Methylene Chloride	0.8	B UJ
156-60-5	trans-1,2-Dichloroethene	0.5	UJ
75-34-3	1,1-Dichloroethane	0.5	UJ
590-20-7	<del>3,3-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
156-59-4	cis-1,2-Dichloroethene	0.5	UJ
74-97-5	<del>Bromochloromethane</del>	<del>0.5</del>	<del>U</del>
67-66-3	Chloroform	0.5	UJ
71-55-6	1,1,1-Trichloroethane	0.5	UJ
56-23-5	Carbon Tetrachloride	0.5	UJ
78-93-3	<del>2-Butanone</del>	<del>5</del>	<del>U</del>
563-58-6	<del>1,1-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
71-43-2	Benzene	0.5	UJ
107-06-2	1,2-Dichloroethane	0.5	UJ
79-01-6	Trichloroethene	0.6	B UJ
78-87-5	1,2-Dichloropropane	0.5	UJ
74-95-3	<del>Dibromomethane</del>	<del>0.5</del>	<del>U</del>
75-27-4	Bromodichloromethane	0.5	UJ
10061-01-5	cis-1,3-Dichloropropene	0.5	UJ
108-88-3	Toluene	0.5	UJ
10061-02-6	trans-1,3-Dichloropropene	0.5	UJ
108-10-1	<del>4-Methyl-2-Pentanone</del>	<del>5</del>	<del>U</del>
79-00-5	1,1,2-Trichloroethane	0.5	UJ
127-18-4	Tetrachloroethene	0.5	UJ

L. Schmitt, 8/19/91

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16C2

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.:            SDG No.: 15A1

Matrix: (soil/water) Water Lab Sample ID: 134925

Sample wt/vol: 25 (g/mL) mL Lab File ID: G124925I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/30/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9	<del>1,2-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	Dibromochloromethane	0.5	U J
106-93-4	<del>1,2-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>2-Hexanone</del>	<del>0.5</del>	<del>U</del>
108-90-7	Chlorobenzene	0.5	U J
630-20-6	<del>1,1,1,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	Ethylbenzene	0.5	U J
1330-20-7	Xylene (total)	0.5	U J
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	Bromoform	0.5	U J
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,2,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U J
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	2-Chlorotoluene	0.5	U
106-43-4	4-Chlorotoluene	0.5	U
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
135-98-8	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	U
106-46-7	1,4-Dichlorobenzene	0.5	U
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzene	0.5	U
104-51-8	n-Butylbenzene	0.5	U
96-12-8	1,2-Dibromo-2-chloropropane	0.5	U
120-82-1	1,2,4-Trichlorobenzene	0.5	U
91-20-3	Naphthalene	0.5	U
87-68-3	Hexachlorobutadiene	0.5	U
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: Aquatec, Inc. Contract: 91000

16C3

Lab Code: AQUAI Case No.: 26425 SAS No.:            SDG No.: 15A1

Matrix: (soil/water) Water Lab Sample ID: 134926

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134926V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/30/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	<del>0.5</del>	<del>U</del>
74-87-3	<del>Chloromethane</del>	<del>0.5</del>	<del>U</del>
75-01-4	Vinyl Chloride	0.5	U
74-83-9	<del>Bromomethane</del>	<del>0.5</del>	<del>U</del>
75-00-3	Chloroethane	1	
75-69-4	<del>Trichlorofluoromethane</del>	<del>0.5</del>	<del>U</del>
75-35-4	1,1-Dichloroethene	0.5	U
75-15-0	<del>Carbon Disulfide</del>	<del>0.5</del>	<del>U</del>
67-64-1	<del>Acetone</del>	<del>10</del>	<del>          </del>
75-09-2	Methylene Chloride	0.2	BJ d
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
590-20-7	<del>2,2-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
156-59-4	cis-1,2-Dichloroethene	1	
74-97-5	<del>Bromochloromethane</del>	<del>0.5</del>	<del>U</del>
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
78-93-3	<del>2-Butanone</del>	<del>5</del>	<del>U</del>
563-58-6	<del>1,1-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
71-43-2	Benzene	0.5	U J
107-06-2	1,2-Dichloroethane	0.5	U
79-01-6	Trichloroethene	2	B
78-87-5	1,2-Dichloropropane	0.5	U
74-95-3	<del>Dibromomethane</del>	<del>0.5</del>	<del>U</del>
75-27-4	Bromodichloromethane	0.5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U J
10061-02-6	trans-1,3-Dichloropropene	0.5	U
108-10-1	<del>4-Methyl-2-Pentanone</del>	<del>5</del>	<del>U</del>
79-00-5	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.2	J

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16C3

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.:            SDG No.: 15A1

Matrix: (soil/water) Water Lab Sample ID: 134926

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134926V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/30/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9	<del>1,3-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	Dibromochloromethane	0.5	U
106-93-4	<del>1,3-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>2-Hexanone</del>	<del>5</del>	<del>U</del>
108-90-7	Chlorobenzene	0.5	U
630-20-6	<del>1,1,1,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.4	J
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	Bromoform	0.5	U
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,2,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	2-Chlorotoluene	0.5	U
106-43-4	4-Chlorotoluene	0.5	U
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
135-98-8	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	U
106-46-7	1,4-Dichlorobenzene	0.5	U
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzene	0.5	U
104-51-8	n-Butylbenzene	0.5	U
96-12-8	1,2-Dibromo-2-chloropropane	0.5	U
120-82-1	1,2,4-Trichlorobenzene	0.5	U
91-20-3	Naphthalene	0.5	U
87-68-3	Hexachlorobutadiene	0.5	U
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

FORM I VOA-2

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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G & H PROJECT  
AREAL SAMPLING  
VOLATILES ANALYSIS DATA

Samples Collected 5/16/91

Chemical Analyses Performed By:  
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Detection limits for aromatic compounds were estimated in Samples UC18, FBUC18, FDUC18, CLUC18, S82, S81S, UC22, and TBB. Results for 2-butanone were rejected in all eight samples.

A low level of acetone in Sample S81S was qualified to none detected at the Contract Required Quantitation Limit (CRQL).

Problems identified on the Chain of Custody records include: (1) some of the corrections made to entries on the forms are made incorrectly, and do not include the date and/or initials; (2) the transfer signatures are incomplete: the first "Relinquished by" entry is not dated, and there is no signature indicating acceptance of the samples by the laboratory; (3) documentation of preservation is unclear, i.e. the meaning of a checkmark in the "VOA" column in the "Preservatives" section of the custody form is unknown, particularly when "(none)" is noted at the top of the column; and (4) separate entries should not be made on the custody record for MS/MSD samples.

Validation of organic data is conducted in conformance with U.S. Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses (February 1, 1988), with modifications by EPA Region I (November 1, 1988).

Based on the supporting documentation, qualifier codes as reported by the laboratory may be added, deleted, or modified by the data validator. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the referenced Functional Guidelines:

- U - The material was analyzed for, but not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary forms and Form I's (copied from the data package) to qualify some of the results as appropriate based on the data review.

### Case Narrative

Ten groundwater samples (including separate samples for matrix spike and matrix spike duplicate analysis) were collected on May 16, 1991, and received by PACE, Inc. on May 17, 1991. The laboratory was requested to perform volatile organics analysis (VOA); the EPA Contract Laboratory Program (CLP) Statement of Work dated 2/88 was followed.

The following samples are included in this Sample Delivery Group:

<u>Client ID</u>	<u>Lab ID</u>	<u>Collection Date</u>
S82	3634	05/16/91
S81S	3635	05/16/91
UC18	3636	05/16/91
TBB	3637	05/16/91
CLUC18	3639	05/16/91
FBUC18	3640	05/16/91
UC22	3642	05/16/91
FDUC18	3643	05/16/91

Volatiles analysis results for these samples were reported by the laboratory under Project Number 810517.502.



### **Volatiles**

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## I. Holding Times

Samples UC18, FDUC18, CLUC18, FBUC18, TBB, S82, S81S, and UC22 were analyzed beyond the 7-day holding time for samples that are not preserved with hydrochloric acid (HCl) in the field, but were all analyzed within 14 days of collection. Detection limits for all aromatic compounds (benzene, toluene, ethylbenzene, chlorobenzene, styrene, and xylenes) in these samples are qualified as estimated "UJ"; no positive results were reported for any of the aromatic compounds.

The chain of custody records indicate that the samples were "chilled", but this reference could be interpreted to be applicable only to Samples S82 and UC22, since it is recorded in the "Remarks" column for these two sample entries on each of the two custody forms. Care should be taken to clearly document activities as applicable to any or all samples on the custody form. The meaning and use of the "VOA" column in the "Preservatives" section of the custody form is also unclear. The box is checked for each sample entered on the form, but "(none)" has also been added to the column header. It has been assumed that the required VOA preservative, hydrochloric acid (HCl), was not used for the purposes of this validation.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

## III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data were affected.

### A. Initial

The samples were analyzed under a single initial calibration, performed on 5/17/91. All criteria were met in this calibration with the exception of the response factor (RF) and Percent Relative Standard Deviation (%RSD) for 2-butanone (RF actual 0.03, criterion 0.10; %RSD actual 39.9, criterion 30). Results for 2-butanone are rejected, "R", in Samples UC18, CLUC18, FDUC18, FBUC18, TBB, S81S, S82, and UC22, due to reduced sensitivity as indicated by the very low RF for this compound.

## **B. Continuing**

Sample analyses were performed on instrument G on three separate analysis dates: 5/24, 5/25, and 5/27/91.

Continuing calibration criteria were met on 5/24/91 with the exception of the RF and Percent Difference (%D) for 2-butanone (RF actual 0.019, criterion 0.10; %D actual 34.4, criterion 25), and the %D for vinyl acetate (actual 31.2, criterion 25), and cis-1,3-dichloropropene (actual 41.3, criterion 25). No additional data are affected.

Continuing calibration criteria were met on 5/25/91 with the exception of the RF and %D for 2-butanone (RF actual 0.015, criterion 0.10; %D actual 50, criterion 25), and the %D for bromomethane (29.6 actual, criterion 25), chloroethane (27.9 actual, criterion 25), vinyl acetate (37.8 actual, criterion 25), and bromoform (actual 32.1, criterion 25). No additional data are affected.

Continuing calibration criteria were met on 5/27/91 with the exception of the RF for 2-butanone (actual 0.024, criterion 0.10), and the %D for acetone (actual 43.0, criterion 25) and vinyl acetate (actual 43.9, criterion 25). No additional data are affected.

## **IV. Blanks**

Acetone was reported at 7 ug/L in VBLK02, and tetrachloroethene was reported at 3 ug/L in VBLK03; no target compounds or extraneous peaks were detected in VBLK01, the trip blank, or the field blank.

Acetone was detected at a very low level in only one sample (S81S); this value is qualified as none detected at the CRQL.

Tetrachloroethene was detected in all three of the sample analyses (S81S, UC18MS, and UC18MSD) performed in association with VBLK03 on 5/27; the PCE results reported for the MS/MSD were correctly flagged as "B" by the laboratory, but the value reported for S81S was not similarly flagged. All three of the reported PCE results are sufficiently high so as not to be attributable to blank contamination; they are, therefore, modified to unqualified positive results.

## **V. Surrogate Recovery**

All surrogate recoveries were within acceptable criteria.

## VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample UC18. All Percent Recovery (%R) and Relative Percent Difference (RPD) values were within acceptable limits.

## VII. Field Duplicates

Compounds and concentrations reported for Samples UC18, FDUC18, and CLUC18 were as follows:

<u>Compound</u>	<u>UC18</u>	<u>FDUC18</u>	<u>CLUC18</u>
1,2-Dichloroethenes	40 ppb, J	62 U	62 U
Tetrachloroethene	1700 ppb	1700 ppb	1900 ppb

Agreement between the results for tetrachloroethene in these three samples was very good; the inconsistent results observed for the 1,2-dichloroethenes is not surprising in view of the dilutions performed to keep tetrachloroethene within the linear range (1:12.5). No data are affected.

## VIII. Internal Standards Performance

Internal standard areas and retention times were within acceptable limits for all sample and QC analyses in this sample delivery group.

## IX. TCL Compound Identification

Reported TCL compound identifications were acceptable.

## X. Compound Quantitation and Reported Detection Limits

Samples UC18, FDUC18, CLUC18, UC22, and S82 were analyzed as dilutions to achieve tetrachloroethene results within the linear range of the instrument; no undiluted runs of these samples were reported or performed, per conversation with C. Corkey of PACE, Inc. The PCE concentrations reported in the diluted analyses were acceptable. Note that the Case Narrative in the data package refers to only two diluted sample runs, when five were, in fact, performed.

Contract Required Quantitation Limits (CRQL's) were appropriately adjusted to reflect the dilutions performed for each sample.

## **XI. Tentatively Identified Compounds**

No tentatively identified compounds (TIC's) were observed or reported in these samples.

## **XII. System Performance**

System performance was satisfactory throughout the analysis of these samples.

## **XIII. Overall Assessment**

The sample results are usable as reported with the following qualifications and modifications:

Detection limits for the aromatic compounds were estimated in all eight samples.

Results for 2-butanone were rejected in all eight samples.

The acetone result reported for S81S is qualified as none detected at the CRQL, and the PCE results for UC18MS, UC18MSD, and S81S are unqualified.

Incomplete, unclear, or inaccurate Chain of Custody records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the custody record in this data package:

1. Corrections that are initialled/dated do not include the complete date they were made, and in two cases a "write-over" is used with no initials or date.

2. Transfer signatures are incomplete: the first "Relinquished by" signature is not dated, and no signature acknowledging receipt and acceptance by the laboratory is recorded.

3. Documentation of preservation is unclear, including the references to cold storage, and the use of the "VOA" column in the "Preservatives" section of the forms.

4. MS/MSD analyses are a laboratory-initiated quality control activity; there should not, therefore, be separate samples on the chain of custody identified as "MS" and "MSD".

Manually integrated areas should be documented in the data package to allow review of the integration method used.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

CLUC18  
00023

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3639.4

Sample wt/vol: 0.5 ~~5.~~ (g/mL) ML

Lab File ID: G3120

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not det.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	100.	U
75-00-3	Chloroethane	100.	U
75-09-2	Methylene Chloride	50.	U
67-64-1	Acetone	100.	U
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	50.	U
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethene (total)	50.	U
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	50.	U
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	50.	U
10061-02-6	Trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachloroethene	1900.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	50.	U
108-90-7	Chlorobenzene	50.	U
100-41-4	Ethylbenzene	50.	U
100-42-5	Styrene	50.	U
1330-20-7	Xylene (total)	50.	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

FBUC18

00029

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3640.8

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3106

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not det.100.

Date Analyzed: 5/24/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	5.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U R
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U ✓ uJ
10061-02-6	Trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	U ✓ uJ
108-90-7	Chlorobenzene	5.	U ✓ uJ
100-41-4	Ethylbenzene	5.	U ✓ uJ
100-42-5	Styrene	5.	U ✓ uJ
1330-20-7	Xylene (total)	5.	U ✓ uJ

caE  
4/24/91

caE  
4/24/91

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

FDUC18

00034

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3643.2

Sample wt/vol: 0.5 ~~5~~ (g/mL) ML

Lab File ID: 63123

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	100.	U
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	50.	U
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U R
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	50.	U
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U W
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	1700.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U UJ
108-90-7	-----Chlorobenzene	50.	U UJ
100-41-4	-----Ethylbenzene	50.	U UJ
100-42-5	-----Styrene	50.	U UJ
1330-20-7	-----Xylene (total)	50.	U UJ



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S 8 1S

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00040

Matrix: (soil/water) WATER

Lab Sample ID: 3635.1

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3151

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/27/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.5	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	6.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	56.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene(total)	5.	U

COE 2/1/91

R COE 2/1/91

COE 2/2/91

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S B 2

00048

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3634.3

Sample wt/vol: 25% (g/mL) ML

Lab File ID: G3118

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-87-3	-----Chloromethane	25.	U
74-83-9	-----Bromomethane	25.	U
75-01-4	-----Vinyl Chloride	25.	U
75-00-3	-----Chloroethane	25.	U
75-09-2	-----Methylene Chloride	12.	U
67-64-1	-----Acetone	25.	U
75-15-0	-----Carbon Disulfide	12.	U
75-35-4	-----1,1-Dichloroethene	12.	U
75-34-3	-----1,1-Dichloroethane	12.	U
540-59-0	-----1,2-Dichloroethene (total)	12.	U
67-66-3	-----Chloroform	12.	U
107-06-2	-----1,2-Dichloroethane	12.	U
78-93-3	-----2-Butanone	25.	U R
71-55-6	-----1,1,1-Trichloroethane	12.	U
56-23-5	-----Carbon Tetrachloride	12.	U
108-05-4	-----Vinyl Acetate	25.	U
75-27-4	-----Bromodichloromethane	12.	U
78-87-5	-----1,2-Dichloropropane	12.	U
10061-01-5	-----cis-1,3-Dichloropropene	12.	U
79-01-6	-----Trichloroethene	25.	U
124-48-1	-----Dibromochloromethane	12.	U
79-00-5	-----1,1,2-Trichloroethane	12.	U
71-43-2	-----Benzene	12.	U UJ
10061-02-6	-----Trans-1,3-Dichloropropene	12.	U
75-25-2	-----Bromoform	12.	U
108-10-1	-----4-Methyl-2-Pentanone	25.	U
591-78-6	-----2-Hexanone	25.	U
127-18-4	-----Tetrachloroethene	240.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	12.	U
108-88-3	-----Toluene	12.	U UJ
108-90-7	-----Chlorobenzene	12.	U UJ
100-41-4	-----Ethylbenzene	12.	U UJ
100-42-5	-----Styrene	12.	U UJ
1330-20-7	-----Xylene (total)	12.	U UJ

case 7/2/91

case 7/2/91

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TBB

00055

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3637.8

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3119

Level: (low/med) LOW

Date Received: 5/17/91

% moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U R
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U UJ
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U UJ
108-90-7	-----Chlorobenzene	5.	U UJ
100-41-4	-----Ethylbenzene	5.	U UJ
100-42-5	-----Styrene	5.	U UJ
1330-20-7	-----Xylene(total)	5.	U UJ

case 7/2/91

UJ

case 7/2/91

UJ

UJ

UJ

UJ

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

UC18

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00060

Matrix: (soil/water) WATER

Lab Sample ID: 3636.0

Sample wt/vol: 0.5 g. (g/mL) ML

Lab File ID: 63117

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	100.	U
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	40.	J
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U R
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	50.	U
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U UJ
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	1700.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U UJ
108-90-7	-----Chlorobenzene	50.	U UJ
100-41-4	-----Ethylbenzene	50.	U UJ
100-42-5	-----Styrene	50.	U UJ
1330-20-7	-----Xylene(total)	50.	U UJ

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

UC22

00075

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3642.4

Sample wt/vol: 0.1 ~~5.~~ (g/mL) ML

Lab File ID: 63124

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 50.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	500.	U
74-83-9	-----Bromomethane	500.	U
75-01-4	-----Vinyl Chloride	500.	U
75-00-3	-----Chloroethane	500.	U
75-09-2	-----Methylene Chloride	250.	U
67-64-1	-----Acetone	500.	U
75-15-0	-----Carbon Disulfide	250.	U
75-35-4	-----1,1-Dichloroethene	250.	U
75-34-3	-----1,1-Dichloroethane	250.	U
540-59-0	-----1,2-Dichloroethene (total)	250.	U
67-66-3	-----Chloroform	250.	U
107-06-2	-----1,2-Dichloroethane	250.	U
78-93-3	-----2-Butanone	500.	U
71-55-6	-----1,1,1-Trichloroethane	250.	U
56-23-5	-----Carbon Tetrachloride	250.	U
108-05-4	-----Vinyl Acetate	500.	U
75-27-4	-----Bromodichloromethane	250.	U
78-87-5	-----1,2-Dichloropropane	250.	U
10061-01-5	-----cis-1,3-Dichloropropene	250.	U
79-01-6	-----Trichloroethene	250.	U
124-48-1	-----Dibromochloromethane	250.	U
79-00-5	-----1,1,2-Trichloroethane	250.	U
71-43-2	-----Benzene	250.	U
10061-02-6	-----Trans-1,3-Dichloropropene	250.	U
75-25-2	-----Bromoform	250.	U
108-10-1	-----4-Methyl-2-Pentanone	500.	U
591-78-6	-----2-Hexanone	500.	U
127-18-4	-----Tetrachloroethene	4700.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	250.	U
108-88-3	-----Toluene	250.	U
108-90-7	-----Chlorobenzene	250.	U
100-41-4	-----Ethylbenzene	250.	U
100-42-5	-----Styrene	250.	U
1330-20-7	-----Xylene (total)	250.	U

R *ca 2/1/91*

UJ

*ca 2/1/91*

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

UC18 MSD

00077

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3641.6

Sample wt/vol: 0.5 g (g/mL) ML

Lab File ID: G3153

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec. 100.

Date Analyzed: 5/18/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/kg) UG/L

Q

74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	100.	U
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	370.	
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	50.	U
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	<del>100.</del>	U R
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	390.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	550.	
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	1600.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	590.	
108-90-7	-----Chlorobenzene	490.	
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

CAE 2/2/91

CAE 2/1/91

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

UC18 MS

00067

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3638.6

Sample wt/vol: 0.5 g. (g/mL) ML

Lab File ID: G3152

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/18/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	100.	U
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	350.	
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	50.	U
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U R
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	370.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	520.	
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	1500.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	540.	
108-90-7	-----Chlorobenzene	480.	
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/16/91

Chemical Analyses Performed By  
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233



## EXECUTIVE SUMMARY

Tetrachloroethene was the only compound detected above the detection limits in the UniFirst samples and vinyl chloride, total 1,2-dichloroethene, and trichloroethene were the only compounds detected in Grace samples. No tentatively identified compounds (TICs) were detected.

Cooler temperature for Grace samples was 10°C. Cooler temperature for UniFirst samples was 16°C. Temperatures outside the range of 4°C  $\pm$  2°C may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Eight treatment system samples were collected (both Unifirst and Grace) and submitted for analysis to PACE, Inc. on May 16, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses. V131V10FS was used for the field duplicate, and matrix spike/matrix spike duplicate.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-19	3607	05/16/91
S1-19DUP	3608	05/16/91
S1-19TB	3610	05/16/91
S4-17	3614	05/16/91
V131V7FS	3622	05/16/91
V131V7TB	3624	05/16/91
V154V7FS	3626	05/16/91
V197V7FS	3625	05/16/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## I. Holding Times

Some of the samples missed holding time for non-preserved samples. Detection limits for aromatic compounds in those samples were estimated.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

## III. Calibration

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data were affected.

### A. Initial

Initial calibration criteria were met with the exception of the for 2-butanone (RRF 0.03-criteria 0.1). Detection limits were rejected.

### B. Continuing

Continuing calibration criteria not met are summarized below.

Date	Time	Compound	RF	%D
5/23	1:01	2-Butanone	0.026 (0.10)	
		Chloromethane		26.3 (25)
		Vinyl acetate		32.6 (25)
		Bromoform		29.1 (25)
	14:43	2-Butanone	0.015 (0.10)	
				50.8 (25)
		Bromoform		26.0 (25)
5/24	11:56	Vinyl acetate	0.019 (0.10)	28.0 (25)
		2-Butanone		
				34.4 (25)
				31.2 (25)
		cis-1,3-Dichloropropene		41.3 (25)

Date	Time	Compound	RF	%D
5/27	11:56	2-Butanone	0.024 (0.10)	
		Vinyl acetate		51.3 (25)
		Bromoform		31.8 (25)

( ) Acceptance criteria

Detection limits for 2-butanone were rejected. All other data were not affected.

**IV. Blanks**

All blanks were acceptable with the exception of VBLK02 which had acetone detected at 5 ppb and V131V7TB which had acetone detected at 2 ppb. Acetone data were qualified as less than the reported values (U).

**V. Surrogate Recovery**

All surrogate recoveries were within acceptance criteria.

**VI. Matrix Spike/Matrix Spike Duplicate**

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.

**VII. Field Duplicates**

Tetrachloroethene was detected in the sample at 3900 ppb, the field duplicate at 3800 ppb, in the MS at 3200 ppb, and in the MSD at 3200 ppb (RSD 11.8). The data are acceptable.

**VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

**IX. TCL Compound Identification**

Target compounds were properly identified.

**X. Compound Quantitation and Reported Detection Limits**

Detection limits were acceptable with regard to the supporting data.

**XI. Tentatively Identified Compounds**

No TICs were detected.

**XII. System Performance**

System performance was acceptable.

**XIII. Overall Assessment of Data for a Case**

Detection limits for 2-butanone were rejected.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

51-19

00020

Site Name: PACE

Contract:

Site Code: PACF

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3607.6

Sample Wt/Vol: 5. (g/mL) ML

Lab File ID: 63064

Depth: low med. LOW

Date Received: 5/17/91

Moisture: not dec.100.

Date Analyzed: 5/23/91

Instrument: (peak, cap) PACI

Dilution Factor: 20.00 ✓

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L Q

74-87-3	-----Chloromethane	200.	U
74-83-9	-----Bromomethane	200.	U
75-01-4	-----Vinyl Chloride	200.	U
75-00-3	-----Chloroethane	200.	U
75-09-2	-----Methylene Chloride	100.	U
67-64-1	-----Acetone	200.	U
75-15-0	-----Carbon Disulfide	100.	U
75-35-4	-----1,1-Dichloroethene	100.	U
75-34-3	-----1,1-Dichloroethane	100.	U
540-59-0	-----1,2-Dichloroethene (total)	100.	U
67-66-2	-----Chloroform	100.	U
107-06-2	-----1,2-Dichloroethane	100.	U
78-93-3	-----2-Butanone	200.	U R
71-55-6	-----1,1,1-Trichloroethane	100.	U
56-23-5	-----Carbon Tetrachloride	100.	U
108-05-4	-----Vinyl Acetate	200.	U
75-27-4	-----Bromodichloromethane	100.	U
78-87-5	-----1,2-Dichloropropane	100.	U
10061-01-5	-----cis-1,3-Dichloropropene	100.	U
79-01-6	-----Trichloroethene	100.	U
124-48-1	-----Dibromochloromethane	100.	U
73-00-5	-----1,1,2-Trichloroethane	100.	U
71-43-2	-----Benzene	100.	U
10061-02-6	-----Trans-1,3-Dichloropropene	100.	U
75-25-2	-----Bromoform	100.	U
108-10-1	-----4-Methyl-2-Pentanone	200.	U
591-78-6	-----2-Hexanone	200.	U
127-18-4	-----Tetrachloroethene	3900.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	100.	U
106-98-3	-----Toluene	100.	U
106-90-7	-----Chlorobenzene	100.	U
100-41-4	-----Ethylbenzene	100.	U
100-42-5	-----Styrene	100.	U
1330-20-7	-----Xylene (total)	100.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-19

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00021

Matrix: (soil/water) WATER

Lab Sample ID: 3607.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3064

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-19DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00026

Matrix: (soil/water) WATER

Lab Sample ID: 3608.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3067

Level: (low/med) LOW

Date Received: 5/17/91

Moisture: not dec.100.

Date Analyzed: 5/23/91

Container: (pack/cap) PACE

Dilution Factor: 20.00 ✓

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	0
74-87-3	Chloromethane	200.	U
74-83-9	Bromomethane	200.	U
75-01-4	Vinyl Chloride	200.	U
75-00-3	Chloroethane	200.	U
75-09-2	Methylene Chloride	100.	U
67-64-1	Acetone	200.	U
75-15-0	Carbon Disulfide	100.	U
75-35-4	1,1-Dichloroethene	100.	U
75-34-3	1,1-Dichloroethane	100.	U
540-59-0	1,2-Dichloroethene (total)	100.	U
67-66-3	Chloroform	100.	U
107-06-2	1,2-Dichloroethane	100.	U
78-93-3	2-Butanone	200.	U
71-55-6	1,1,1-Trichloroethane	100.	U
56-23-5	Carbon Tetrachloride	100.	U
108-05-4	Vinyl Acetate	200.	U
75-27-4	Bromodichloromethane	100.	U
78-87-5	1,2-Dichloropropane	100.	U
10061-01-5	cis-1,3-Dichloropropene	100.	U
79-01-6	Trichloroethene	100.	U
124-48-1	Dibromochloromethane	100.	U
79-00-5	1,1,2-Trichloroethane	100.	U
71-43-2	Benzene	100.	U
10061-02-6	Trans-1,3-Dichloropropene	100.	U
75-25-2	Bromoform	100.	U
108-10-1	4-Methyl-2-Pentanone	200.	U
591-78-6	2-Hexanone	200.	U
127-18-4	Tetrachloroethene	3800.	
79-34-5	1,1,2,2-Tetrachloroethane	100.	U
108-88-3	Toluene	100.	U
108-90-7	Chlorobenzene	100.	U
100-41-4	Ethylbenzene	100.	U
100-42-5	Styrene	100.	U
1330-20-7	Xylene (total)	100.	U

VOLEATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-19DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3608.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3067

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-19TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG NO. 04032

Matrix: (soil/water) WATER

Lab Sample ID: 3610.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63068

Level: (low/med) LOW

Date Received: 5/17/91

Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L Q

74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U <sup>R</sup>
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-19TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3610.6

00033

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63068

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S4-17

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG 0037

Matrix: (soil/water) WATER

Lab Sample ID: 3614.9

Sample wt vol: 5. (g/mL) ML

Lab File ID: G3084

Level: (low/med) LOW

Date Received: 5/17/91

Moisture: not dec.100.

Date Analyzed: 5/23/91

Volume: (pack/cap) PACK

Dilution Factor: 10.00✓

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L		Q
74-87-3	Chloromethane	100.	U	
74-83-9	Bromomethane	100.	U	
75-01-4	Vinyl Chloride	100.	U	
75-00-3	Chloroethane	100.	U	
75-08-2	Methylene Chloride	50.	U	
67-64-1	Acetone	100.	U	
75-15-0	Carbon Disulfide	50.	U	
75-35-4	1,1-Dichloroethene	50.	U	
75-34-3	1,1-Dichloroethane	50.	U	
540-59-0	1,2-Dichloroethene (total)	50.	U	
67-66-3	Chloroform	50.	U	
107-06-2	1,2-Dichloroethane	50.	U	
78-93-3	2-Butanone	100.	U	WR
71-55-6	1,1,1-Trichloroethane	50.	U	
56-23-5	Carbon Tetrachloride	50.	U	
108-05-4	Vinyl Acetate	100.	U	
75-27-4	Bromodichloromethane	50.	U	
78-87-5	1,2-Dichloropropane	50.	U	
10061-01-5	cis-1,3-Dichloropropene	50.	U	
79-01-6	Trichloroethene	50.	U	
124-48-1	Dibromochloromethane	50.	U	
79-00-5	1,1,2-Trichloroethane	50.	U	
71-43-2	Benzene	50.	U	
10061-02-6	Trans-1,3-Dichloropropene	50.	U	
75-25-2	Bromoform	50.	U	
108-10-1	4-Methyl-2-Pentanone	100.	U	
591-78-6	2-Hexanone	100.	U	
127-18-4	Tetrachloroethene	2000.		
79-34-5	1,1,2,2-Tetrachloroethane	50.	U	
108-88-3	Toluene	50.	U	
108-90-7	Chlorobenzene	50.	U	
100-41-4	Ethylbenzene	50.	U	
100-42-5	Styrene	50.	U	
1330-20-7	Xylene (total)	50.	U	

VOLATILE ORGANICS ANALYSIS DATA SHEET  
 TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S4-17

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

00038  
 Lab Sample ID: 3614.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3084

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOL ILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

000137V7FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3622.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3131

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/27/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	360.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	78.	su
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	930.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	HR
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	430.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U J
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U J
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene(total)	50.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: PACE

Contract:

V131V7FS

00018

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3622.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3131

Level: (low/med) LOW

Date Received: 5/17/91

Moisture: not dec.100.

Date Analyzed: 5/27/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOL ILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131071026

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3624.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3099

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec. 100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	2.	J
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U R
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U J
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U J
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene(total)	5.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
 1 TENTATIVELY IDENTIFIED COMPOUNDS

V131V7TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00027

Matrix: (soil/water) WATER

Lab Sample ID: 3624.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63099

Level: (low/med) LOW

Date Received: 5/17/91

Moisture: not dec.100.

Date Analyzed: 5/24/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

V154V7FS

00032

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3626.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3105

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/24/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	50.	U
74-83-9	Bromomethane	50.	U
75-01-4	Vinyl Chloride	50.	U
75-00-3	Chloroethane	50.	U
75-09-2	Methylene Chloride	25.	U
67-64-1	Acetone	50.	U
75-15-0	Carbon Disulfide	25.	U
75-35-4	1,1-Dichloroethene	25.	U
75-34-3	1,1-Dichloroethane	25.	U
540-59-0	1,2-Dichloroethene (total)	430.	
67-66-3	Chloroform	25.	U
107-06-2	1,2-Dichloroethane	25.	U
78-93-3	2-Butanone	50.	U
71-55-6	1,1,1-Trichloroethane	25.	U
56-23-5	Carbon Tetrachloride	25.	U
108-05-4	Vinyl Acetate	50.	U
75-27-4	Bromodichloromethane	25.	U
78-87-5	1,2-Dichloropropane	25.	U
10061-01-5	cis-1,3-Dichloropropene	25.	U
79-01-6	Trichloroethene	400.	
124-48-1	Dibromochloromethane	25.	U
79-00-5	1,1,2-Trichloroethane	25.	U
71-43-2	Benzene	25.	U
10061-02-6	Trans-1,3-Dichloropropene	25.	U
75-25-2	Bromoform	25.	U
108-10-1	4-Methyl-2-Pentanone	50.	U
591-78-6	2-Hexanone	50.	U
127-18-4	Tetrachloroethene	25.	U
79-34-5	1,1,2,2-Tetrachloroethane	25.	U
108-88-3	Toluene	25.	U
108-90-7	Chlorobenzene	25.	U
100-41-4	Ethylbenzene	25.	U
100-42-5	Styrene	25.	U
1330-20-7	Xylene(total)	25.	U

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V154V7FS

Lab Name: PACE

Contract:

00033

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3626.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3105

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/24/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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1A  
VOL ILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

V197V7FS

00039

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3625.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63104

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/24/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	1100.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1600.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U R
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	140.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U J
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U J
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene(total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
 TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V197V7FS

00040

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3625.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3104

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/24/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEMS  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/16/91

Chemical Analyses Performed By  
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

With the exception of the field blanks and trip blank, foaming occurred during sample analyses, especially in Samples S5-14, S6-19, and S6-19DUP.

Detection limits for aromatic compounds were estimated in UniFirst samples.

Cooler temperature upon receipt of W.R. Grace samples by the laboratory was 10°C; cooler temperature for the UniFirst samples was 16°C. Temperatures outside the 4°C  $\pm$  2°C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



00058

W. R. GRACE

PACE Project Number: 810517501

PACE Sample Number:

95 0036211

Date Collected:

05/16/91

Date Received:

05/17/91

ParameterUnitsMDLV140 V7 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

### Case Narrative

Seven samples were collected and submitted to PACE, Inc. on May 16, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-19FB	3609	05/16/91
S5-14	3615	05/16/91
S6-19	3616	05/16/91
S6-19DUP	3617	05/16/91
S6-19TB	3618	05/16/91
V140V7FS	3619	05/16/91
V140V7FB	3621	05/16/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

Samples from the W.R. Grace treatment plant were preserved with HCl. Holding times were met for all W.R. Grace samples.

Samples from the UniFirst treatment plant were apparently not preserved. All UniFirst samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all UniFirst samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Peaks were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive sample data were affected.

### **A. Initial**

Initial calibration criteria were met on 5/23/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/24/91 with the exception of the % difference for 1,1,2,2-tetrachloroethane (actual 26.83; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/25/91.

Continuing calibration criteria were met on 5/28/91 with the exception of the % difference for methylene chloride (actual 31.12; criteria 25) and 1,1,2,2-tetrachloroethane (actual 25.37; criteria 25). Data were not affected.

## **IV. Blanks**

The trip blank, field blanks, and method blanks were clean.

## V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

## VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-19. The percent recoveries for 1,1-dichloroethene were below QC criteria in the MS and MSD. No positive results for this compound were detected, so no data were qualified.

## VII. Field Duplicates

Samples S6-19 and S6-19DUP were submitted as duplicate samples. No compounds were detected in either sample.

## VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

TCL compound identifications were acceptable.

## X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53

<u>Compound</u>	<u>MDL (ug/L)</u>
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Compounds reported in Sample S5-14 were quantified using the relative response factor from the initial calibration rather than the response factor from the continuing calibration. Correct results are listed below.

<u>Compound</u>	<u>Concentration (ug/L)</u>
1,1-Dichloroethene	1.2
1,1-Dichloroethane	2.2
1,1,1-Trichloroethane	27

The concentration of 1,1,1-trichloroethane in this sample was beyond the calibration range of the instrument. This result met precision and accuracy criteria and was acceptable as reported.

The concentration of methylene chloride in Sample S5-14 was below the PQL-determined MDL for this project. This result was corrected to "ND."

In the sample results column of the Form I for S1-19FB, "DONE" was typed in for each compound. A corrected Form I with "ND" in place of "DONE" is included with this validation report.

All other results and detection limits were acceptable with regard to the supporting data.

**XI. Tentatively Identified Compounds**

No TICs were reported for this sample delivery group.

**XII. System Performance**

System performance was acceptable.

**XIII. Overall Assessment of Data for a Case**

Compound concentrations were corrected for Sample S5-14.

Detection limits for aromatic compounds were estimated in all UniFirst samples.

UNIFIRST/ENSR

PACE Project Number: 810517500

PACE Sample Number:

95 0036092

Date Collected:

05/16/91

Date Received:

05/17/91

ParameterUnitsMDLS1-19 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	DONE	ND
Chloroethane	ug/L	0.5	DONE	
Methylene chloride	ug/L	0.5	DONE	
1,1-Dichloroethene	ug/L	0.5	DONE	
1,1-Dichloroethane	ug/L	0.5	DONE	
trans-1,2-Dichloroethene	ug/L	0.5	DONE	
cis-1,2-Dichloroethene	ug/L	0.5	DONE	
Chloroform	ug/L	0.5	DONE	
1,2-Dichloroethane	ug/L	0.5	DONE	
1,1,1-Trichloroethane	ug/L	0.5	DONE	
Carbon tetrachloride	ug/L	0.5	DONE	
Bromodichloromethane	ug/L	0.5	DONE	
1,2-Dichloropropane	ug/L	0.5	DONE	
cis-1,3-Dichloropropene	ug/L	0.5	DONE	
Trichloroethene	ug/L	0.5	DONE	
Dibromochloromethane	ug/L	0.5	DONE	
1,1,2-Trichloroethane	ug/L	0.5	DONE	
Benzene	ug/L	0.5	DONE	
trans-1,3-Dichloropropene	ug/L	0.5	DONE	
Bromoform	ug/L	0.5	DONE	
Tetrachloroethene	ug/L	0.5	DONE	
1,1,2,2-Tetrachloroethane	ug/L	0.5	DONE	
Toluene	ug/L	0.5	DONE	
Chlorobenzene	ug/L	0.5	DONE	
Ethyl benzene	ug/L	0.5	DONE	
Xylene, total	ug/L	0.5	DONE	

MDL Method Detection Limit

ND Not detected at or above the MDL.



00034

UNIFIRST/ENSR

PACE Project Number: 810517500

PACE Sample Number:

95 0036157

Date Collected:

05/16/91

Date Received:

05/17/91

ParameterUnitsMDLS5-14ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	<del>ND</del> <i>ND 2.1 7/1/91</i>
1,1-Dichloroethene	ug/L	0.5	<i>131.2</i>
1,1-Dichloroethane	ug/L	0.5	<i>252.2</i>
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	<del>28.4</del> <i>28.27</i>
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND <i>u</i>
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND <i>u</i>
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

00042

UNIFIRST/ENSR

PACE Project Number: 810517500

PACE Sample Number:

95 0036165

Date Collected:

05/16/91

Date Received:

05/17/91

ParameterUnitsMDLS6-19ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND u)
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND u)
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

00046

UNIFIRST/ENSR

PACE Project Number: 810517500

PACE Sample Number:

95 0036173

Date Collected:

05/16/91

Date Received:

05/17/91

ParameterUnitsMDLS6-19 DupORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND u
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND u
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit  
 ND Not detected at or above the MDL.

00050

UNIFIRST/ENSR

PACE Project Number: 810517500

PACE Sample Number:

95 0036181

Date Collected:

05/16/91

Date Received:

05/17/91

ParameterUnitsMDLS6-19 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND uJ
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND uJ
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810517501

PACE Sample Number:	95 0036190
Date Collected:	05/16/91
Date Received:	05/17/91
<u>Parameter</u>	<u>Units</u> <u>MDL</u> <u>V140 V7 FS</u>

ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL      Method Detection Limit  
 ND      Not detected at or above the MDL.

00058

W. R. GRACE

PACE Project Number: 810517501

PACE Sample Number:

95 0036211

Date Collected:

05/16/91

Date Received:

05/17/91

ParameterUnitsMDLV140 V7 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/16/91 - 5/20/91

Chemical Analyses Performed By  
Aquatec Inc.

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Samples were submitted for Method 524.2 analyses. Although surrogate recoveries and most internal area counts were acceptable, the data should be used with caution because no field QC samples were submitted, nor were matrix spike/matrix spike duplicate samples requested.

The analyte list for Method 524.2 analyses was reduced for the Wells G&H project. However, because of its unfamiliarity with the project, Aquatec analyzed for the full analyte list. For Method 524.2, compounds not being considered in this project were "lined out" on the Form Is submitted with this validation report.

Cooler temperatures were not recorded by the laboratory upon receipt of samples. Cooler temperatures outside the 4°C  $\pm$  2°C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



### Case Narrative

Eleven samples were collected and submitted to Aquatec Inc. on May 16, May 17, May 18, and May 20, 1991. The laboratory was requested to perform volatile organics (VOA) pursuant to Method 524.2.

The samples included for in this Sample Delivery Group (SDG) for CLP analyses are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
16D2	134928	05/16/91
16D3	134929	05/16/91
17C1	134931	05/17/91
17C2	134932	05/17/91
17C3	134933	05/17/91
17D1	134934	05/17/91
17D2	134935	05/17/91
17D3	134936	05/17/91
18C1	134938	05/18/91
18D1	134939	05/18/91
20C1	134940	05/20/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

According to the chain of custody forms, Samples 18C1, 18D1, and 20C1 were preserved with HCL at the time of collection. All other samples were unpreserved. Samples 18D1 and 20C1 were analyzed within the 14-day holding time for preserved volatile aqueous samples. Sample 18C1 was analyzed three days outside the 14-day holding time; all positive results and detection limits for that sample were qualified as estimated.

Samples 16D2, 16D3, 17C1, 17C2, 17D1, 17D2, and 17D3 were analyzed within the 7-day holding time for unpreserved volatile aqueous samples. Sample 17C3 was analyzed outside the 7-day holding time for unpreserved samples but within the 14-day holding time for volatile aqueous samples. Detection limits for aromatic compounds were qualified as estimated in Sample 17C3.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

### **A. Initial**

Initial calibration criteria were met on 5/22/91, 5/23/91, and 6/3/91 (Instrument 5100G).

### **B. Continuing**

Continuing calibration criteria were met on 5/21/91, 5/30/91, and 6/3/91 (Instrument 5100G).

## **IV. Blanks**

Methylene chloride was reported in Method Blanks VBLKS5, VBLKV3, and VBLKY3. Methylene chloride, trichloroethene, and toluene were reported in Method Blank VBLKR9. Methylene chloride results were qualified as less than the reported values in the associated field samples.

No field blanks or trip blanks were submitted for Method 524.2 analyses.

#### **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

Matrix spike/matrix spike duplicate analyses were not requested for this SDG.

#### **VII. Field Duplicates**

No field duplicates were submitted with this SDG.

#### **VIII. Internal Standards Performance**

Internal standard area counts were below criteria in Sample 18D1 for fluorobenzene, 1,4-dichlorobenzene-d4, and chlorobenzene-d5. Detection limits and positive results for 18D1 were qualified as estimated.

All other internal standards areas and retention times were acceptable.

#### **IX. TCL Compound Identification**

TCL compound identifications were acceptable.

#### **X. Compound Quantitation and Reported Detection Limits**

Results and detection limits were acceptable based on the supporting data.

#### **XI. Tentatively Identified Compounds**

TICs were not provided for these analyses.

#### **XII. System Performance**

System performance was acceptable.

### **XIII. Overall Assessment of Data for a Case**

No field blanks, trip blanks, or field duplicates were submitted for Method 524.2 analyses, nor were MS/MSD samples requested. Although surrogate recoveries and most internal area counts were acceptable, these data should be used with caution because of the lack of quality control samples.

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16D2

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:            SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134928

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134928V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/22/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	<del>0.5</del>	<del>U</del>
74-87-3	<del>Chloromethane</del>	<del>0.5</del>	<del>U</del>
75-01-4	<del>Vinyl Chloride</del>	<del>0.5</del>	<del>U</del>
74-83-9	<del>Bromomethane</del>	<del>0.5</del>	<del>U</del>
75-00-3	<del>Chloroethane</del>	<del>0.5</del>	<del>U</del>
75-69-4	<del>Trichlorofluoromethane</del>	<del>0.5</del>	<del>U</del>
75-35-4	<del>1,1-Dichloroethene</del>	<del>0.5</del>	<del>U</del>
75-15-0	<del>Carbon Disulfide</del>	<del>0.5</del>	<del>U</del>
67-64-1	<del>Acetone</del>	<del>13</del>	<del>U</del>
75-09-2	<del>Methylene Chloride</del>	<del>0.5</del>	<del>U</del>
156-60-5	<del>trans-1,2-Dichloroethene</del>	<del>0.5</del>	<del>U</del>
75-34-3	<del>1,1-Dichloroethane</del>	<del>0.5</del>	<del>U</del>
590-20-7	<del>2,2-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
156-59-4	<del>cis-1,2-Dichloroethene</del>	<del>0.5</del>	<del>U</del>
74-97-5	<del>Bromochloromethane</del>	<del>0.5</del>	<del>U</del>
67-66-3	<del>Chloroform</del>	<del>0.5</del>	<del>U</del>
71-55-6	<del>1,1,1-Trichloroethane</del>	<del>0.5</del>	<del>U</del>
56-23-5	<del>Carbon Tetrachloride</del>	<del>0.5</del>	<del>U</del>
78-93-3	<del>2-Butanone</del>	<del>5</del>	<del>U</del>
563-58-6	<del>1,1-Dichloropropene</del>	<del>0.5</del>	<del>U</del>
71-43-2	<del>Benzene</del>	<del>0.5</del>	<del>U</del>
107-06-2	<del>1,2-Dichloroethane</del>	<del>0.5</del>	<del>U</del>
79-01-6	<del>Trichloroethene</del>	<del>0.5</del>	<del>U</del>
78-87-5	<del>1,2-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
74-95-3	<del>Dibromomethane</del>	<del>0.5</del>	<del>U</del>
75-27-4	<del>Bromodichloromethane</del>	<del>0.5</del>	<del>U</del>
10061-01-5	<del>cis-1,3-Dichloropropene</del>	<del>0.5</del>	<del>U</del>
108-88-3	<del>Toluene</del>	<del>0.5</del>	<del>U</del>
10061-02-6	<del>trans-1,3-Dichloropropene</del>	<del>0.5</del>	<del>U</del>
108-10-1	<del>4-Methyl-2-Pentanone</del>	<del>5</del>	<del>U</del>
79-00-5	<del>1,1,2-Trichloroethane</del>	<del>0.5</del>	<del>U</del>
127-18-4	<del>Tetrachloroethene</del>	<del>0.5</del>	<del>U</del>

E. Schuster 8/19/91

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16D2

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:            SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134928

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134928V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/22/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/L

Q

142-28-9	<del>1,3-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	Dibromochloromethane	0.5	U
106-93-4	<del>1,2-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>3-Hexanone</del>	<del>5</del>	<del>U</del>
108-90-7	Chlorobenzene	0.5	U
630-20-6	<del>1,1,1,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	Bromoform	0.5	U
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,2,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	2-Chlorotoluene	0.5	U
106-43-4	4-Chlorotoluene	0.5	U
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
135-98-8	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	U
106-46-7	1,4-Dichlorobenzene	0.5	U
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzene	0.5	U
104-51-8	n-Butylbenzene	0.5	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	U
120-82-1	1,2,4-Trichlorobenzene	0.5	U
91-20-3	Naphthalene	0.5	U
87-68-3	Hexachlorobutadiene	0.5	U
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

FORM I VOA-2

000026

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16D3

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:            SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134929

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134929V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/22/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	<del>0.5</del>	<del>U</del>
74-87-3	<del>Chloromethane</del>	<del>0.5</del>	<del>U</del>
75-01-4	Vinyl Chloride	0.5	U
74-83-9	<del>Bromomethane</del>	<del>0.5</del>	<del>U</del>
75-00-3	Chloroethane	0.5	U
75-69-4	<del>Trichlorofluoromethane</del>	<del>0.5</del>	<del>U</del>
75-35-4	1,1-Dichloroethene	0.5	U
75-15-0	<del>Carbon Disulfide</del>	<del>0.5</del>	<del>U</del>
67-64-1	<del>Acetone</del>	<del>11</del>	<del>U</del>
75-09-2	Methylene Chloride	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
590-20-7	<del>2,2-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
156-59-4	cis-1,2-Dichloroethene	0.5	U
74-97-5	<del>Bromochloromethane</del>	<del>0.5</del>	<del>U</del>
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
78-93-3	<del>2-Butanone</del>	<del>5</del>	<del>U</del>
563-58-6	<del>1,1-Dichloropropene</del>	<del>0.5</del>	<del>U</del>
71-43-2	Benzene	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
74-95-3	<del>Dibromomethane</del>	<del>0.5</del>	<del>U</del>
75-27-4	Bromodichloromethane	0.5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
108-10-1	<del>4-Methyl-2-Pentanone</del>	<del>5</del>	<del>U</del>
79-00-5	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.5	U



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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16D3

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:            SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134929

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134929V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/22/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9	<del>1,2-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	Dibromochloromethane	0.5	U
106-93-4	<del>1,2-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>2-Hexanone</del>	<del>5</del>	<del>U</del>
108-90-7	Chlorobenzene	0.5	U
630-20-6	<del>1,1,1,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	Bromoform	0.5	U
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,2,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	2-Chlorotoluene	0.5	U
106-43-4	4-Chlorotoluene	0.5	U
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
135-98-8	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	U
106-46-7	1,4-Dichlorobenzene	0.5	U
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzene	0.5	U
104-51-8	n-Butylbenzene	0.5	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	U
120-82-1	1,2,4-Trichlorobenzene	0.5	U
91-20-3	Naphthalene	0.5	U
87-68-3	Hexachlorobutadiene	0.5	U
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

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524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17C1

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:            SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134931

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134931I3V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/23/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	0.5	U
74-87-3	<del>Chloromethane</del>	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	<del>Bromomethane</del>	0.5	U
75-00-3	Chloroethane	0.7	
75-69-4	<del>Trichlorofluoromethane</del>	0.5	U
75-35-4	1,1-Dichloroethene	0.5	U
75-15-0	<del>Carbon Disulfide</del>	0.5	U
67-64-1	<del>Acetone</del>	10	
75-09-2	Methylene Chloride	0.3	JB U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
590-20-7	<del>2,2-Dichloropropane</del>	0.5	U
156-59-4	cis-1,2-Dichloroethene	0.3	J
74-97-5	<del>Bromoethane</del>	0.5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.4	J
56-23-5	Carbon Tetrachloride	0.5	U
78-93-3	<del>2-Butanone</del>	5	U
563-58-6	<del>1,1-Dichloropropane</del>	0.5	U
71-43-2	Benzene	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
79-01-6	Trichloroethene	0.7	
78-87-5	1,2-Dichloropropane	0.5	U
74-95-3	<del>Dibromomethane</del>	0.5	U
75-27-4	Bromodichloromethane	0.5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.2	
10061-02-6	trans-1,3-Dichloropropene	0.5	U
108-10-1	<del>4-Methyl-2-Pentanone</del>	5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17C1

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:            SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134931

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134931I3V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/23/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9	<del>1,3-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	Dibromochloromethane	0.5	U
106-93-4	<del>1,2-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>2-Hexanone</del>	<del>5</del>	<del>U</del>
108-90-7	Chlorobenzene	0.5	U
630-20-6	<del>1,1,1,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	Bromoform	0.5	U
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,2,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	2-Chlorotoluene	0.5	U
106-43-4	4-Chlorotoluene	0.5	U
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
135-98-8	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	U
106-46-7	1,4-Dichlorobenzene	0.5	U
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzene	0.5	U
104-51-8	n-Butylbenzene	0.5	U
96-12-8	1,2-Dibromo-2-chloropropane	0.5	U
120-82-1	1,2,4-Trichlorobenzene	0.5	U
91-20-3	Naphthalene	0.5	U
87-68-3	Hexachlorobutadiene	0.5	U
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

FORM I VOA-2

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17C2

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:            SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134932

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134932V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/23/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	<del>0.5</del>	<del>U</del>
74-87-3	<del>Chloromethane</del>	<del>0.5</del>	<del>U</del>
75-01-4	Vinyl Chloride	8	
74-83-9	<del>Bromomethane</del>	<del>0.5</del>	<del>U</del>
75-00-3	Chloroethane	2	
75-69-4	<del>Trichlorofluoromethane</del>	<del>0.5</del>	<del>U</del>
75-35-4	1,1-Dichloroethene	0.5	U
75-15-0	<del>Carbon Disulfide</del>	<del>0.5</del>	<del>U</del>
67-64-1	<del>Acetone</del>	<del>10</del>	
75-09-2	Methylene Chloride	0.5	BU
156-60-5	trans-1,2-Dichloroethene	0.9	
75-34-3	1,1-Dichloroethane	0.5	U
590-20-7	<del>2,2-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
156-59-4	cis-1,2-Dichloroethene	24	
74-97-5	<del>Bromochloromethane</del>	<del>0.5</del>	<del>U</del>
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.3	J
56-23-5	Carbon Tetrachloride	0.5	U
78-93-3	<del>2-Butanone</del>	<del>5</del>	<del>U</del>
563-58-6	<del>2,1-Dichloropropene</del>	<del>0.5</del>	<del>U</del>
71-43-2	Benzene	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
79-01-6	Trichloroethene	25	
78-87-5	1,2-Dichloropropane	0.5	U
74-95-3	<del>Dibromomethane</del>	<del>0.5</del>	<del>U</del>
75-27-4	Bromodichloromethane	0.5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.4	J
10061-02-6	trans-1,3-Dichloropropene	0.5	U
108-10-1	<del>4-Methyl-2-Pentanone</del>	<del>5</del>	<del>U</del>
79-00-5	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.9	

FORM I VOA

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524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: Aquatec, Inc. Contract: 91000

17C2

Lab Code: AQUAI Case No.: 26431 SAS No.:          SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134932

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134932V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/23/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9	<del>1,3-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	Dibromochloromethane	0.5	U
106-93-4	<del>1,3-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>2-Hexanone</del>	<del>5</del>	<del>U</del>
108-90-7	Chlorobenzene	0.5	U
630-20-6	<del>1,1,1,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	Bromoform	0.5	U
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,2,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	2-Chlorotoluene	0.5	U
106-43-4	4-Chlorotoluene	0.5	U
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
135-98-8	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	U
106-46-7	1,4-Dichlorobenzene	0.5	U
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzene	0.5	U
104-51-8	n-Butylbenzene	0.5	U
96-12-8	1,2-Dibromo-2-chloropropane	0.5	U
120-82-1	1,2,4-Trichlorobenzene	0.5	U
91-20-3	Naphthalene	0.5	U
87-68-3	Hexachlorobutadiene	0.5	U
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

FORM I VOA-2

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524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17C3

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:            SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134933

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134933I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/30/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	0.5	U
74-87-3	<del>Chloromethane</del>	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	<del>Bromomethane</del>	0.5	U
75-00-3	Chloroethane	0.5	U
75-69-4	<del>Trichlorofluoromethane</del>	0.5	U
75-35-4	1,1-Dichloroethene	0.5	U
75-15-0	<del>Carbon Disulfide</del>	0.5	U
67-64-1	<del>Acetone</del>	19	
75-09-2	Methylene Chloride	0.5	BU
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
590-20-7	<del>2,2-Dichloropropane</del>	0.5	U
156-59-4	cis-1,2-Dichloroethene	0.5	U
74-97-5	<del>Bromochloromethane</del>	0.5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
78-93-3	<del>2-Butanone</del>	5	U
563-58-6	<del>1,1-Dichloropropene</del>	0.5	U
71-43-2	Benzene	0.5	U J
107-06-2	1,2-Dichloroethane	0.5	U
79-01-6	Trichloroethene	0.5	J
78-87-5	1,2-Dichloropropane	0.5	U
74-95-3	<del>Dibromomethane</del>	0.5	U
75-27-4	Bromodichloromethane	0.5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.2	J
10061-02-6	trans-1,3-Dichloropropene	0.5	U
108-10-1	<del>4-Methyl-2-Pentanone</del>	5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.5	U

FORM I VOA

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524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17C3

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:            SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134933

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134933I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/30/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9	<del>1,3-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	Dibromochloromethane	0.5	U
106-93-4	<del>1,3-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>2-Hexanone</del>	<del>5</del>	<del>U</del>
108-90-7	Chlorobenzene	0.5	U
630-20-6	<del>1,1,1,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	Bromoform	0.5	U
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,2,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	2-Chlorotoluene	0.5	U
106-43-4	4-Chlorotoluene	0.5	U
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
135-98-8	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	U
106-46-7	1,4-Dichlorobenzene	0.5	U
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzene	0.5	U
104-51-8	n-Butylbenzene	0.5	U
96-12-8	1,2-Dibromo-2-chloropropane	0.5	U
120-82-1	1,2,4-Trichlorobenzene	0.5	U
91-20-3	Naphthalene	0.5	U
87-68-3	Hexachlorobutadiene	0.5	U
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

FORM I VOA-2

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524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17D1

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:            SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134934

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134934V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/23/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	0.5	U
74-87-3	<del>Chloromethane</del>	0.5	U
75-01-4	<u>Vinyl Chloride</u>	0.5	U
74-83-9	<del>Bromomethane</del>	0.5	U
75-00-3	<u>Chloroethane</u>	0.4	J
75-69-4	<del>Trichlorofluoromethane</del>	0.5	U
75-35-4	<u>1,1-Dichloroethene</u>	0.5	U
75-15-0	<del>Carbon Disulfide</del>	0.5	U
67-64-1	<del>Acetone</del>	5	U
75-09-2	<u>Methylene Chloride</u>	0.2	BJU
156-60-5	<u>trans-1,2-Dichloroethene</u>	0.5	U
75-34-3	<u>1,1-Dichloroethane</u>	0.5	U
590-20-7	<del>2,2-Dichloropropane</del>	0.5	U
156-59-4	<u>cis-1,2-Dichloroethene</u>	0.5	U
74-97-5	<del>Bromochloromethane</del>	0.5	U
67-66-3	<u>Chloroform</u>	0.5	U
71-55-6	<u>1,1,1-Trichloroethane</u>	0.5	U
56-23-5	<u>Carbon Tetrachloride</u>	0.5	U
78-93-3	<del>2-Butanone</del>	5	U
563-58-6	<del>1,1-Dichloropropene</del>	0.5	U
71-43-2	<u>Benzene</u>	0.5	U
107-06-2	<u>1,2-Dichloroethane</u>	0.5	U
79-01-6	<u>Trichloroethene</u>	0.5	U
78-87-5	<u>1,2-Dichloropropane</u>	0.5	U
74-95-3	<del>Dibromomethane</del>	0.5	U
75-27-4	<u>Bromodichloromethane</u>	0.5	U
10061-01-5	<u>cis-1,3-Dichloropropene</u>	0.5	U
108-88-3	<u>Toluene</u>	0.2	J
10061-02-6	<u>trans-1,3-Dichloropropene</u>	0.5	U
108-10-1	<del>4-Methyl-2-Pentanone</del>	5	U
79-00-5	<u>1,1,2-Trichloroethane</u>	0.5	U
127-18-4	<u>Tetrachloroethene</u>	0.5	U



524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17D1

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:          SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134934

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134934V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/23/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9	<del>1,3-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	Dibromochloromethane	0.5	U
106-93-4	<del>1,2-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>Hexanone</del>	<del>5</del>	<del>U</del>
108-90-7	Chlorobenzene	0.5	U
630-20-6	<del>1,1,1,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	Bromoform	0.5	U
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,3,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	2-Chlorotoluene	0.5	U
106-43-4	4-Chlorotoluene	0.5	U
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
135-98-8	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	U
106-46-7	1,4-Dichlorobenzene	0.5	U
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzene	0.5	U
104-51-8	n-Butylbenzene	0.5	U
96-12-8	1,2-Dibromo-2-chloropropane	0.5	U
120-82-1	1,2,4-Trichlorobenzene	0.5	U
91-20-3	Naphthalene	0.5	U
87-68-3	Hexachlorobutadiene	0.5	U
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

FORM I VOA-2

000125

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17D2

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:          SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134935

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134935V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/23/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	<del>0.5</del>	<del>U</del>
74-87-3	<del>Chloromethane</del>	<del>0.5</del>	<del>U</del>
75-01-4	Vinyl Chloride	0.4	J
74-83-9	<del>Bromomethane</del>	<del>0.5</del>	<del>U</del>
75-00-3	Chloroethane	2	
75-69-4	<del>Trichlorofluoromethane</del>	<del>0.5</del>	<del>U</del>
75-35-4	1,1-Dichloroethene	0.5	U
75-15-0	<del>Carbon Disulfide</del>	<del>0.5</del>	<del>U</del>
67-64-1	<del>Heptane</del>	<del>5</del>	<del>U</del>
75-09-2	Methylene Chloride	0.6	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
590-20-7	<del>2,2-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
156-59-4	cis-1,2-Dichloroethene	2	
74-97-5	<del>Bromochloromethane</del>	<del>0.5</del>	<del>U</del>
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.3	J
56-23-5	Carbon Tetrachloride	0.5	U
78-93-3	<del>2-Butanone</del>	<del>5</del>	<del>U</del>
563-58-6	<del>1,1-Dichloropropene</del>	<del>0.5</del>	<del>U</del>
71-43-2	Benzene	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
79-01-6	Trichloroethene	3	
78-87-5	1,2-Dichloropropane	0.5	U
74-95-3	<del>Dibromomethane</del>	<del>0.5</del>	<del>U</del>
75-27-4	Bromodichloromethane	0.5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.2	J
10061-02-6	trans-1,3-Dichloropropene	0.5	U
108-10-1	<del>4-Methyl-2-Pentanone</del>	<del>5</del>	<del>U</del>
79-00-5	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17D2

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:          SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134935

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134935V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/23/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9	1,3-Dichloropropane	0.5	U
124-48-1	Dibromochloromethane	0.5	U
106-93-4	1,2-Dibromoethane	0.5	U
591-78-6	2-Hexanone	5	U
108-90-7	Chlorobenzene	0.5	U
630-20-6	1,1,1,2-Tetrachloroethane	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U
98-82-8	Isopropylbenzene	0.5	U
108-86-1	Bromobenzene	0.5	U
96-18-4	1,1,2-Trichloropropane	0.5	U
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
103-65-1	n-Propylbenzene	0.5	U
95-49-8	2-Chlorotoluene	0.5	U
106-43-4	4-Chlorotoluene	0.5	U
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
135-98-8	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	U
106-46-7	1,4-Dichlorobenzene	0.5	U
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzene	0.5	U
104-51-8	n-Butylbenzene	0.5	U
96-12-8	1,2-Dibromo-2-chloropropane	0.5	U
120-82-1	1,2,4-Trichlorobenzene	0.5	U
91-20-3	Naphthalene	0.5	U
87-68-3	Hexachlorobutadiene	0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17D3

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:          SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134936

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134936V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/23/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	<del>0.5</del>	<del>U</del>
74-87-3	<del>Chloromethane</del>	<del>0.5</del>	<del>U</del>
75-01-4	Vinyl Chloride	0.5	U
74-83-9	<del>Bromomethane</del>	<del>0.5</del>	<del>U</del>
75-00-3	Chloroethane	0.5	U
75-69-4	<del>Trichlorofluoromethane</del>	<del>0.5</del>	<del>U</del>
75-35-4	1,1-Dichloroethene	0.5	U
75-15-0	<del>Carbon Disulfide</del>	<del>0.5</del>	<del>U</del>
67-64-1	<del>Acetone</del>	<del>5</del>	<del>U</del>
75-09-2	Methylene Chloride	0.3	BJ U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
590-20-7	<del>2,2-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
156-59-4	cis-1,2-Dichloroethene	0.5	U
74-97-5	<del>Bromochloromethane</del>	<del>0.5</del>	<del>U</del>
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
78-93-3	<del>2-Butanone</del>	<del>5</del>	<del>U</del>
563-58-6	<del>1,1-Dichloropropene</del>	<del>0.5</del>	<del>U</del>
71-43-2	Benzene	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
74-95-3	<del>Dibromomethane</del>	<del>0.5</del>	<del>U</del>
75-27-4	Bromodichloromethane	0.5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.2	J
10061-02-6	trans-1,3-Dichloropropene	0.5	U
108-10-1	<del>4 Methyl 2 Pentanone</del>	<del>5</del>	<del>U</del>
79-00-5	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17D3

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:          SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134936

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134936V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/23/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9	<del>1,3-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	Dibromochloromethane	0.5	U
106-93-4	<del>1,2-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>2-Hexanone</del>	<del>5</del>	<del>U</del>
108-90-7	Chlorobenzene	0.5	U
630-20-6	<del>1,1,1,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	Bromoform	0.5	U
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,2,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	2-Chlorotoluene	0.5	U
106-43-4	4-Chlorotoluene	0.5	U
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
135-98-8	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	U
106-46-7	1,4-Dichlorobenzene	0.5	U
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzene	0.5	U
104-51-8	n-Butylbenzene	0.5	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	U
120-82-1	1,2,4-Trichlorobenzene	0.5	U
91-20-3	Naphthalene	0.5	U
87-68-3	Hexachlorobutadiene	0.5	U
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

FORM I VOA-2

000165

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

18C1

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:            SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134938

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134938I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 06/04/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	0.5	U
74-87-3	<del>Chloromethane</del>	0.5	U
75-01-4	Vinyl Chloride	0.3	J
74-83-9	<del>Bromomethane</del>	0.5	U
75-00-3	Chloroethane	1	
75-69-4	<del>Trichlorofluoromethane</del>	0.5	U
75-35-4	1,1-Dichloroethene	0.5	UJ
75-15-0	<del>Carbon Disulfide</del>	0.5	U
67-64-1	<del>Acetone</del>	5	U
75-09-2	Methylene Chloride	1	UJ
156-60-5	trans-1,2-Dichloroethene	0.5	UJ
75-34-3	1,1-Dichloroethane	0.5	UJ
590-20-7	<del>2,2-Dichloropropane</del>	0.5	U
156-59-4	cis-1,2-Dichloroethene	2	
74-97-5	<del>Bromochloromethane</del>	0.5	U
67-66-3	Chloroform	0.5	UJ
71-55-6	1,1,1-Trichloroethane	0.5	UJ
56-23-5	Carbon Tetrachloride	0.5	UJ
78-93-3	<del>2-Butanone</del>	5	U
563-58-6	<del>1,1-Dichloropropene</del>	0.5	U
71-43-2	Benzene	0.5	UJ
107-06-2	1,2-Dichloroethane	0.5	UJ
79-01-6	Trichloroethene	3	UJ
78-87-5	1,2-Dichloropropane	0.5	UJ
74-95-3	<del>Dibromomethane</del>	0.5	U
75-27-4	Bromodichloromethane	0.5	UJ
10061-01-5	cis-1,3-Dichloropropene	0.5	UJ
108-88-3	Toluene	0.2	J
10061-02-6	trans-1,3-Dichloropropene	0.5	UJ
108-10-1	<del>4-Methyl-2-Pentanone</del>	5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.5	J

FORM I VOA

000173

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

18C1

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:            SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134938

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134938I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 06/04/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/L

Q

142-28-9	<del>1,3-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	<del>Dibromochloromethane</del>	<del>0.5</del>	<del>U</del>
106-93-4	<del>1,2-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>1-Hexanone</del>	<del>5</del>	<del>U</del>
108-90-7	<del>Chlorobenzene</del>	<del>0.5</del>	<del>U</del>
630-20-6	<del>1,1,1,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	<del>Ethylbenzene</del>	<del>0.5</del>	<del>U</del>
1330-20-7	<del>Xylene (total)</del>	<del>0.5</del>	<del>U</del>
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	<del>Bromoform</del>	<del>0.5</del>	<del>U</del>
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,2,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	<del>1,1,2,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	<del>2-Chlorotoluene</del>	<del>0.5</del>	<del>U</del>
106-43-4	<del>4-Chlorotoluene</del>	<del>0.5</del>	<del>U</del>
108-67-8	<del>1,3,5-Trimethylbenzene</del>	<del>0.5</del>	<del>U</del>
98-06-6	<del>tert-Butylbenzene</del>	<del>0.5</del>	<del>U</del>
95-63-6	<del>1,2,4-Trimethylbenzene</del>	<del>0.5</del>	<del>U</del>
135-98-8	<del>sec-Butylbenzene</del>	<del>0.5</del>	<del>U</del>
541-73-1	<del>1,3-Dichlorobenzene</del>	<del>0.5</del>	<del>U</del>
106-46-7	<del>1,4-Dichlorobenzene</del>	<del>0.5</del>	<del>U</del>
99-87-6	<del>4-Isopropyltoluene</del>	<del>0.5</del>	<del>U</del>
95-50-1	<del>1,2-Dichlorobenzene</del>	<del>0.5</del>	<del>U</del>
104-51-8	<del>n-Butylbenzene</del>	<del>0.5</del>	<del>U</del>
96-12-8	<del>1,2-Dibromo-3-Chloropropane</del>	<del>0.5</del>	<del>U</del>
120-82-1	<del>1,2,4-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>
91-20-3	<del>Naphthalene</del>	<del>0.5</del>	<del>U</del>
87-68-3	<del>Hexachlorobutadiene</del>	<del>0.5</del>	<del>U</del>
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

FORM I VOA-2

00018

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

18D1

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:          SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134939

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134939I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/23/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	0.5	U
74-87-3	<del>Chloromethane</del>	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	<del>Bromomethane</del>	0.5	U
75-00-3	Chloroethane	0.8	U
75-69-4	<del>Trichlorofluoromethane</del>	0.5	U
75-35-4	1,1-Dichloroethene	0.5	U
75-15-0	<del>Carbon Disulfide</del>	0.5	U
67-64-1	<del>Acetone</del>	5	U
75-09-2	Methylene Chloride	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
590-20-7	<del>2,2-Dichloropropane</del>	0.5	U
156-59-4	cis-1,2-Dichloroethene	0.5	U
74-97-5	<del>Bromoethanol</del>	0.5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
78-93-3	<del>2-Butanone</del>	5	U
563-58-6	<del>1,1-Dichloropropene</del>	0.5	U
71-43-2	Benzene	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
74-95-3	<del>Dibromomethane</del>	0.5	U
75-27-4	Bromodichloromethane	0.5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
108-10-1	<del>4-Methyl-2-Pentanone</del>	5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.5	U

FORM I VOA

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524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

18D1

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:          SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134939

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134939I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/23/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/L

Q

142-28-9	<del>1,3-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	Dibromochloromethane	0.5	U
106-93-4	<del>1,2-Dibromoethane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>8-Hexanone</del>	<del>5</del>	<del>U</del>
108-90-7	Chlorobenzene	0.5	U
630-20-6	<del>1,1,1,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	Bromoform	0.5	U
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,2,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	2-Chlorotoluene	0.5	U
106-43-4	4-Chlorotoluene	0.5	U
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
135-98-8	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	U
106-46-7	1,4-Dichlorobenzene	0.5	U
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzene	0.5	U
104-51-8	n-Butylbenzene	0.5	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	U
120-82-1	1,2,4-Trichlorobenzene	0.5	U
91-20-3	Naphthalene	0.5	U
87-68-3	Hexachlorobutadiene	0.5	U
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

FORM I VOA-2

000207

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMP

20C1

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:          SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134940

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134940I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 06/03/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

75-71-8	<del>Dichlorodifluoromethane</del>	<del>0.5</del>	<del>U</del>
74-87-3	<del>Chloromethane</del>	<del>0.5</del>	<del>U</del>
75-01-4	Vinyl Chloride	0.5	U
74-83-9	<del>Bromomethane</del>	<del>0.5</del>	<del>U</del>
75-00-3	Chloroethane	0.5	J
75-69-4	<del>Trichlorofluoromethane</del>	<del>0.5</del>	<del>U</del>
75-35-4	1,1-Dichloroethene	0.5	U
75-15-0	<del>Carbon Disulfide</del>	<del>0.5</del>	<del>U</del>
67-64-1	<del>Acetone</del>	<del>5</del>	<del>U</del>
75-09-2	Methylene Chloride	1	B u
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
590-20-7	<del>2,2-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
156-59-4	cis-1,2-Dichloroethene	0.5	U
74-97-5	<del>Bromochloromethane</del>	<del>0.5</del>	<del>U</del>
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
78-93-3	<del>2-Butanone</del>	<del>5</del>	<del>U</del>
563-58-6	<del>1,1-Dichloropropene</del>	<del>0.5</del>	<del>U</del>
71-43-2	Benzene	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
74-95-3	<del>Dibromomethane</del>	<del>0.5</del>	<del>U</del>
75-27-4	Bromodichloromethane	0.5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
108-10-1	<del>4-Methyl-2-Pentanone</del>	<del>5</del>	<del>U</del>
79-00-5	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.5	U

524.2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

20C1

Lab Name: Aquatec, Inc. Contract: 91000

Lab Code: AQUAI Case No.: 26431 SAS No.:            SDG No.: 16D2

Matrix: (soil/water) Water Lab Sample ID: 134940

Sample wt/vol: 25 (g/mL) mL Lab File ID: G134940I2V

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 06/03/91

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

142-28-9	<del>1,3-Dichloropropane</del>	<del>0.5</del>	<del>U</del>
124-48-1	Dibromochloromethane	0.5	U
106-93-4	<del>1,3-Dibromoothane</del>	<del>0.5</del>	<del>U</del>
591-78-6	<del>2-Nonanone</del>	<del>5</del>	<del>U</del>
108-90-7	Chlorobenzene	0.5	U
630-20-6	<del>1,1,1,2-Tetrachloroethane</del>	<del>0.5</del>	<del>U</del>
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	<del>Styrene</del>	<del>0.5</del>	<del>U</del>
75-25-2	Bromoform	0.5	U
98-82-8	<del>Isopropylbenzene</del>	<del>0.5</del>	<del>U</del>
108-86-1	<del>Bromobenzene</del>	<del>0.5</del>	<del>U</del>
96-18-4	<del>1,2,3-Trichloropropane</del>	<del>0.5</del>	<del>U</del>
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
103-65-1	<del>n-Propylbenzene</del>	<del>0.5</del>	<del>U</del>
95-49-8	2-Chlorotoluene	0.5	U
106-43-4	4-Chlorotoluene	0.5	U
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
135-98-8	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	U
106-46-7	<del>1,4-Dichlorobenzene</del>	<del>0.5</del>	<del>U</del>
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzene	0.5	U
104-51-8	n-Butylbenzene	0.5	U
96-12-8	1,2-Dibromo-2-chloropropane	0.5	U
120-82-1	1,2,4-Trichlorobenzene	0.5	U
91-20-3	Naphthalene	0.5	U
87-68-3	Hexachlorobutadiene	0.5	U
87-61-6	<del>1,2,3-Trichlorobenzene</del>	<del>0.5</del>	<del>U</del>

FORM I VOA-2

000222



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/17/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Treatment system samples from both the UniFirst and W.R. Grace treatment systems were included in this sample delivery group. Data quality for this sample delivery group was good.

Only one set of quality control samples was analyzed with this sample delivery group. Because of this, the following samples were not analyzed by the laboratory: S1-20DUP, S1-20MS, and S1-20MSD.

Cooler temperatures upon receipt of samples by the laboratory were 5°C for the W.R. Grace samples and 7°C for the UniFirst samples. Temperatures of outside the 4°C  $\pm$  2°C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Ten samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 17, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
V131V8FD	3649	05/17/91
V131V8FS	3648	05/17/91
V131V8FB	3650	05/17/91
V154V8FS	3652	05/17/91
V197V8FS	3651	05/17/91
S1-20	3653	05/17/91
S1-20TB	3655	05/17/91
S4-18	3660	05/17/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimated in all samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### **A. Initial**

Initial calibration criteria were met on 5/17/91 (Instrument G) with the exception of the RRF for 2-butanone (actual 0.030; criteria 0.01) and the %RSD for 2-butanone (actual 39.9; criteria 30). Detection limits for 2-butanone were rejected in Samples V154V8FS, S1-20, and S1-20TB.

Initial calibration criteria were met on 5/24/91 (Instrument J).

Initial calibration criteria were met on 5/28/91 (Instrument J).

Initial calibration criteria were met on 5/28/91 (Instrument G) with the exception of the RRF for 2-butanone (actual 0.077; criteria 0.1). Detection limits for 2-butanone were rejected in Sample S4-18.

### **B. Continuing**

Continuing calibration criteria were met on 5/25/91 with the exception of the % difference for carbon disulfide (actual 27.2; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/27/91 with the exception of the % difference for acetone (actual 43.0; criteria 25) and vinyl acetate (actual 43.9; criteria 25). Data were not affected.



Continuing calibration criteria were met on 5/28/91 with the exception of the RF for 2-butanone (actual 0.061; criteria 0.1) and the % difference for bromomethane (actual 43.8; criteria 25) and acetone (actual 53.2; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/29/91.

#### **IV. Blanks**

Methylene chloride was reported in Method Blank VBLK02. Acetone was reported in Method Blanks VBLK01 and VBLK02 and in Trip blank V131V8TB. Tetrachloroethene was reported in Method Blank VBLK03. The results for acetone in Samples V131V8TB, V131V8FS, V131V8FSMS, and V131V8FSMSD were qualified as less than the reported value.

According to the Form I, Trip Blank V131V8TB was run at a 10-fold dilution. This is inappropriate for a trip blank.

#### **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample V131V8FS. The percent recoveries for trichloroethene in the MS and the MSD were below QC criteria. Trichloroethene in Samples V131V8FS and V131V8FD was qualified as estimated. The percent recovery for 1,1-dichloroethene in the MS was below QC criteria. No positive results for 1,1-dichloroethene were reported in field samples; data were not affected.

Tetrachloroethene was reported in Samples V131V8FD, V131V8FSMS, and V131V8FSMSD at concentrations of 24, 260, and 54 ug/L, respectively. This compound was not detected in V131V8FS. Tetrachloroethene concentrations were rejected in these three samples. The compound 2-butanone was reported in the MSD at 150 ug/L, but not in the field sample, duplicate, or MS. The concentration of 2-butanone in the MSD was rejected.

Concentrations of the spiking compounds were not reported on the Forms I for the MS or the MSD.

## VII. Field Duplicates

Compounds and concentrations (in ug/L) reported in Samples V131V8FS and V131V8FD were as follows:

<u>Compound</u>	<u>V131V8FS</u>	<u>V131V8FD</u>
Vinyl Chloride	360	360
1,2-Dichloroethenes	990	960
Trichloroethene	500	480

Results were within QC criteria.

## VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

TCL compound identifications were acceptable.

## X. Compound Quantitation and Reported Detection Limits

Results and detection limits were acceptable with regard to the supporting data.

## XI. Tentatively Identified Compounds

No TICs were reported for this SDG.

## XII. System Performance

System performance requires attention. Manual integrations should be addressed. The trip blank associated with these samples was improperly diluted. Response factor criteria should be monitored.

## XIII. Overall Assessment of Data for a Case

Data quality for this sample delivery group was good. Detection limits for aromatic compounds were estimated in all samples.

Detection limits for 2-Butanone were rejected in Samples V154V8FS, S1-20, S1-20TB, and S4-18.

Acetone results were qualified as less than the reported value.



VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V131V8FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00026

Matrix: (soil/water) WATER

Lab Sample ID: 3649.1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2713

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
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16.				
17.				
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19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131V8FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00025

Matrix: (soil/water) WATER

Lab Sample ID: 3649.1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2713

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	UG/L
			Q
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	360.	
75-00-3	Chloroethane	100.	U
75-09-2	Methylene Chloride	50.	U
67-64-1	Acetone	100.	U
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	50.	U
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethene (total)	960.	
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	480.	U
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	50.	UJ
10061-02-6	Trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachloroethene	24.	J
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	50.	UJ
108-90-7	Chlorobenzene	50.	UJ
100-41-4	Ethylbenzene	50.	UJ
100-42-5	Styrene	50.	UJ
1330-20-7	Xylene (total)	50.	UJ

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131V8FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00025

Matrix: (soil/water) WATER

Lab Sample ID: 3649.1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2713

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/kg) UG/L	0
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	360.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	960.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	480.	J
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	24.	J
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	UJ
108-90-7	-----Chlorobenzene	50.	UJ
100-41-4	-----Ethylbenzene	50.	UJ
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	UJ

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V131V8FD

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00026

Matrix: (soil/water) WATER

Lab Sample ID: 3649.1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2713

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

V131V8FS

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00035

Matrix: (soil/water) WATER

Lab Sample ID: 3648.3

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2712

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	360.	U
75-00-3	Chloroethane	100.	U
75-09-2	Methylene Chloride	50.	U
67-64-1	Acetone	68.	U
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	50.	U
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethene (total)	990.	U
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	500.	U
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	50.	U
10061-02-6	Trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachloroethene	50.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	50.	U
108-90-7	Chlorobenzene	50.	U
100-41-4	Ethylbenzene	50.	U
100-42-5	Styrene	50.	U
1330-20-7	Xylene (total)	50.	U

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6127191



VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V131V8FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00036

Matrix: (soil/water) WATER

Lab Sample ID: 3648.3

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2712

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

V131V8TB

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00047

Matrix: (soil/water) WATER

Lab Sample ID: 3650.5

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2714

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/25/91

Column: (pack/cap) PAC1

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	0
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	100.	U
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	65.	28U 6127191
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	50.	U
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	50.	U
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	UJ
108-90-7	-----Chlorobenzene	50.	UJ
100-41-4	-----Ethylbenzene	50.	UJ
100-42-5	-----Styrene	50.	UJ
1330-20-7	-----Xylene (total)	50.	UJ

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V131V8TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No. 00048

Matrix: (soil/water) WATER

Lab Sample ID: 3650.5

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2714

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACE

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V154V8FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00053

Matrix: (soil/water) WATER

Lab Sample ID: 3652.1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: G3156

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/28/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/kg) UG/L

Q

74-87-3	-----Chloromethane	25.	U
74-83-9	-----Bromomethane	25.	U
75-01-4	-----Vinyl Chloride	25.	U
75-00-3	-----Chloroethane	25.	U
75-09-2	-----Methylene Chloride	12.	U
67-64-1	-----Acetone	25.	U
75-15-0	-----Carbon Disulfide	12.	U
75-35-4	-----1,1-Dichloroethene	12.	U
75-34-3	-----1,1-Dichloroethane	12.	U
540-59-0	-----1,2-Dichloroethene (total)	380.	
67-66-3	-----Chloroform	12.	U
107-06-2	-----1,2-Dichloroethane	12.	U
78-93-3	-----2-Butanone	25.	U R
71-55-6	-----1,1,1-Trichloroethane	12.	U
56-23-5	-----Carbon Tetrachloride	12.	U
108-05-4	-----Vinyl Acetate	25.	U
75-27-4	-----Bromodichloromethane	12.	U
78-87-5	-----1,2-Dichloropropane	12.	U
10061-01-5	-----cis-1,3-Dichloropropene	12.	U
79-01-6	-----Trichloroethene	300.	
124-48-1	-----Dibromochloromethane	12.	U
79-00-5	-----1,1,2-Trichloroethane	12.	U
71-43-2	-----Benzene	12.	U J
10061-02-6	-----Trans-1,3-Dichloropropene	12.	U
75-25-2	-----Bromoform	12.	U
108-10-1	-----4-Methyl-2-Pentanone	25.	U
591-78-6	-----2-Hexanone	25.	U
127-18-4	-----Tetrachloroethene	46.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	12.	U
108-88-3	-----Toluene	12.	U J
108-90-7	-----Chlorobenzene	12.	U J
100-41-4	-----Ethylbenzene	12.	U J
100-42-5	-----Styrene	12.	U J
1330-20-7	-----Xylene (total)	12.	U J

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

LABORATORY NO.

V154V8FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00054

Matrix: (soil/water) WATER

Lab Sample ID: 3852.1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: 63156

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/28/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V197V8FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00001

Matrix: (soil/water) WATER

Lab Sample ID: 3651.3

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2715

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/25/91

Column: (pack/cap) PAC1

Dilution Factor: 10.00

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	1100.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1600.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	220.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	25.	J
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	13.	J
108-90-7	-----Chlorobenzene	50.	UJ
100-41-4	-----Ethylbenzene	50.	UJ
100-42-5	-----Styrene	50.	UJ
1330-20-7	-----Xylene (total)	50.	UJ

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V197V8FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00062

Matrix: (soil/water) WATER

Lab Sample ID: 3651.3

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2715

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

51-20

00191

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3653.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63157

Level: (low/med) LOW

Date Received: 5/18/91

Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	UG/L
74-87-3	Chloromethane	200.	U
74-83-9	Bromomethane	200.	U
75-01-4	Vinyl Chloride	200.	U
75-00-3	Chloroethane	200.	U
75-09-2	Methylene Chloride	100.	U
67-64-1	Acetone	200.	U
75-15-0	Carbon Disulfide	100.	U
75-35-4	1,1-Dichloroethene	100.	U
75-34-3	1,1-Dichloroethane	100.	U
540-59-0	1,2-Dichloroethene (total)	100.	U
67-66-3	Chloroform	100.	U
107-06-2	1,2-Dichloroethane	100.	U
78-93-3	2-Butanone	200.	U R
71-55-6	1,1,1-Trichloroethane	100.	U
56-23-5	Carbon Tetrachloride	100.	U
108-05-4	Vinyl Acetate	200.	U
75-27-4	Bromodichloromethane	100.	U
78-87-5	1,2-Dichloropropane	100.	U
10061-01-5	cis-1,3-Dichloropropene	100.	U
79-01-6	Trichloroethene	100.	U
124-48-1	Dibromochloromethane	100.	U
79-00-5	1,1,2-Trichloroethane	100.	U
71-43-2	Benzene	100.	U J
10061-02-6	Trans-1,3-Dichloropropene	100.	U
75-25-2	Bromoform	100.	U
108-10-1	4-Methyl-2-Pentanone	200.	U
591-78-6	2-Hexanone	200.	U
127-18-4	Tetrachloroethene	3300.	U
79-34-5	1,1,2,2-Tetrachloroethane	100.	U
108-88-3	Toluene	100.	U J
108-90-7	Chlorobenzene	100.	U J
100-41-4	Ethylbenzene	100.	U J
100-42-5	Styrene	100.	U J
1330-20-7	Xylene (total)	100.	U J



VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

81-20

Lab Code: PACE

Case No.: FPC

SAS No.:

SDG No.:

00192

Matrix: (soil/water) WATER

Lab Sample ID: 3653.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3157

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pack/cap) PAC#

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-20TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

C0196A

Matrix: (soil/water) WATER

Lab Sample ID: 3655.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63158

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/kg) UG/L

0

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	5.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	5.	U
75-35-4-----	1,1-Dichloroethene	5.	U
75-34-3-----	1,1-Dichloroethane	5.	U
540-59-0-----	1,2-Dichloroethene (total)	5.	U
67-66-3-----	Chloroform	5.	U
107-06-2-----	1,2-Dichloroethane	5.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	5.	U
56-23-5-----	Carbon Tetrachloride	5.	U
108-05-4-----	Vinyl Acetate	10.	U
75-27-4-----	Bromodichloromethane	5.	U
78-87-5-----	1,2-Dichloropropane	5.	U
10061-01-5-----	cis-1,3-Dichloropropene	5.	U
79-01-6-----	Trichloroethene	5.	U
124-48-1-----	Dibromochloromethane	5.	U
79-00-5-----	1,1,2-Trichloroethane	5.	U
71-43-2-----	Benzene	5.	UJ
10061-02-6-----	Trans-1,3-Dichloropropene	5.	U
75-25-2-----	Bromoform	5.	U
108-10-1-----	4-Methyl-2-Pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	5.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5.	U
108-88-3-----	Toluene	5.	UJ
108-90-7-----	Chlorobenzene	5.	UJ
100-41-4-----	Ethylbenzene	5.	UJ
100-42-5-----	Styrene	5.	UJ
1330-20-7-----	Xylene (total)	5.	UJ

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

SI-207B

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00196B

Matrix: (soil/water) WATER

Lab Sample ID: 3655.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63158

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

54-18

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00200

Matrix: (soil/water) WATER

Lab Sample ID: 3660.2

Sample wt/vol: 5. (g/ml) ML

Lab File ID: 63187

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	100.	U
75-00-3	Chloroethane	100.	U
75-09-2	Methylene Chloride	50.	U
67-64-1	Acetone	100.	U
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	50.	U
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethene (total)	50.	U
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	50.	U
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	50.	U
10061-02-6	Trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachloroethene	1600.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	50.	U
108-90-7	Chlorobenzene	50.	U
100-41-4	Ethylbenzene	50.	U
100-42-5	Styrene	50.	U
1330-20-7	Xylene (total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

64-18

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00201

Matrix: (soil/water) WATER

Lab Sample ID: 3660.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63187

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ng/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	n
1.				
2.				
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1A  
VOLUME ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE

8FSA  
V131VMS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

K8 6/23/91

Matrix: (soil/water) WATER

Lab Sample ID: 3648.3

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2768 66

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	260.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	97.	BJ
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	270	EXA 7/3/91
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	920.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	800	EXA 7/3/91
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	440	J EXA 7/3/91
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	260.	R
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	480	J EXA 7/3/91
108-90-7	-----Chlorobenzene	430	J
100-41-4	-----Ethylbenzene	50.	UJ
100-42-5	-----Styrene	50.	UJ
1330-20-7	-----Xylene (total)	50.	UJ

1A  
VO' TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

PFSMSD  
V131VMSD

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

R3  
6/23/91

Matrix: (soil/water) WATER

Lab Sample ID: 3648.3

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2769

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/29/91

Column: (pac)/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	250.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	110.	B
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	310	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	890.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	150.	R
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	800	U
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	480	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	84.	R
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	500	U
108-90-7	-----Chlorobenzene	450	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEMS  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/17/91

Chemical Analyses Performed By  
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233



## EXECUTIVE SUMMARY

Foaming occurred during the analysis of all samples except the field blanks and trip blank. The foaming was probably responsible for the very poor results for the matrix spike and matrix spike duplicate samples. Sample results should be used with caution.

Cooler temperature upon receipt of samples by the laboratory was 5°C.

Samples for this sample delivery group were submitted from both the W.R. Grace and UniFirst treatment systems. Only one set of QC samples was run for this day's samples. Samples S6-20DUP, S6-20MS, and S6-20MSD were not analyzed.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Seven samples were collected and submitted to PACE, Inc. on May 17, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-20FB	3656	05/17/91
S5-15	3661	05/17/91
S6-20	3662	05/17/91
S6-20TB	3664	05/17/91
V140V8FS	3645	05/17/91
V140V8FD	3646	05/17/91
V140V8FB	3647	05/17/91

Samples S2-18 and S3-18 were also submitted with the above samples for Method 524.2 analyses. Because of the high levels of tetrachloroethene in S2-18 and S3-18, these samples were analyzed pursuant to CLP methodology for volatile organic compounds.

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive sample data were affected.

### **A. Initial**

Initial calibration criteria were met on 5/23/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/28/91 (11:06) with the exception of the % difference for methylene chloride (actual 31.12; criteria 25) and 1,1,2,2-tetrachloroethane (actual 25.37; criteria 25). Data were not affected. The peak area for 1,4-difluorobenzene, an internal standard, was manually integrated. The result in Sample S5-15 for 1,1,1-trichloroethane, which is quantitated using 1,4-difluorobenzene, was qualified as estimated.

Continuing calibration criteria were met on 5/28/91 (21:35) with the exception of the % difference for carbon tetrachloride (actual 25.57; criteria 25). Data were not qualified. Areas were manually integrated for bromochloromethane and 1,4-difluorobenzene, which are internal standards. Data were not affected.

Continuing calibration criteria were met on 5/29/91.

## **IV. Blanks**

The trip blank, field blanks, and method blanks were clean.

#### **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample V140V8FS. Data presented on the Form III in the data package was for the wrong sample. Percent recoveries and relative percent differences were calculated by the data validator. Percent recoveries for trichloroethene, 1,1-dichloroethene, benzene, and toluene were below QC criteria in the MS and MSD. The compound 1,1-dichloroethene was completely lost in the MSD analysis. The relative percent difference for 1,1-dichloroethene was well above QC criteria (actual 200; criteria 24). Although no positive data were affected, the detection limit for 1,1-dichloroethene was rejected in Samples V140V8FS and V140V8FD. These poor results for the MS and MSD were probably due to foaming of samples during analyses.

#### **VII. Field Duplicates**

Samples V140V8FS and V140V8FD were subitted as duplicate samples. No compounds were detected in either sample.

#### **VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

#### **IX. TCL Compound Identification**

TCL compound identifications were acceptable.

#### **X. Compound Quantitation and Reported Detection Limits**

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The result reported for 1,1,1-trichloroethane in Sample S5-15 (28 ug/L) was beyond the calibration range of the instrument (25 ug/L). This result met precision and accuracy criteria and was acceptable as reported.

The result for methylene chloride in Sample S5-15 was below the PQL study-determined MDL. This result was reported as "ND."

All other results and detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

## **XII. System Performance**

System performance was acceptable.

## **XIII. Overall Assessment of Data for a Case**

Detection limits for aromatic compounds were estimated in all samples. The detection limit for 1,1-dichloroethene was rejected in Samples V140V8FS and V140V8FD.

Methylene chloride was corrected to "ND" in Sample S5-15.

UNIFIRST/ENSR

PACE Project Number: 810518501

00047

PACE Sample Number:

95 0036645

Date Collected:

05/17/91

Date Received:

05/18/91

ParameterUnitsMDLS6-20 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND uJ 7/8/91
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND uJ
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



W. R. GRACE

PACE Project Number: 810518500

00025

PACE Sample Number:

95 0036459

Date Collected:

05/17/91

Date Received:

05/18/91

ParameterUnitsMDLV140 V8 FSORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	<del>0.5</del>	<del>ND</del> R 2K 7/8/91
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND uJ
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND uJ
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit  
ND Not detected at or above the MDL.

00028

W. R. GRACE

PACE Project Number: 810518500

PACE Sample Number:

95 0036467

Date Collected:

05/17/91

Date Received:

05/18/91

ParameterUnitsMDLV140 V8 FDORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	<del>0.5</del>	ND <i>R</i> <i>248</i>
1,1-Dichloroethane	ug/L	0.5	ND <i>7/3/91</i>
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND <i>wj</i>
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND <i>wj</i>
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810518500

00031

PACE Sample Number:

95 0036475

Date Collected:

05/17/91

Date Received:

05/18/91

Parameter

Units

MDL

V140 V8 FB

ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND

cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND

1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND

trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND

Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit  
ND Not detected at or above the MDL.

2KJ  
7/8/91

UNIFIRST/ENSR

PACE Project Number: 810518501

00034

PACE Sample Number:

95 0036564

Date Collected:

05/17/91

Date Received:

05/18/91

ParameterUnitsMDLSI-20 FB

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND uJ 2/8/91
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND uJ
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810518501 00037

PACE Sample Number: 95 0036610

Date Collected: 05/17/91

Date Received: 05/18/91

ParameterUnitsMDLS5-15ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	<del>0.7</del> ND
1,1-Dichloroethene	ug/L	0.5	1.6
1,1-Dichloroethane	ug/L	0.5	2.7
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	<del>27.8</del> 28J
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND (u)
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND (u)
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

2KJ 7/8/91  
M1 7/1/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810518501

00044

PACE Sample Number:

95 0036629

Date Collected:

05/17/91

Date Received:

05/18/91

ParameterUnitsMDLS6-20ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND <i>u) 2KJ 7/18/91</i>
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND <i>(u)</i>
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810518501

00047

PACE Sample Number:

95 0036645

Date Collected:

05/17/91

Date Received:

05/18/91

ParameterUnitsMDLS6-20 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

ND 7/8/91

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
AND  
AREAL SAMPLING  
INORGANIC ANALYSES DATA

Samples Collected 5/17/91-5/30/91

Chemical Analyses Performed By  
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233



## EXECUTIVE SUMMARY

All wet chemistry data is acceptable as modified.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

Inorganic Data Validation  
for  
Environmental Project Control, Inc.  
Samples Collected 5/17/91-5/30/91

Case Narrative

This group contained 64 water samples. Samples S1-23, S1-23DUP, S1-23FB, S6-23, S1-31, S1-31DUP, S1-31FB, and S6-31 were analyzed for total alkalinity, chloride, fluoride, nitrite/nitrate, total phosphorus, dissolved silica, total suspended solids, total dissolved solids, sulfate, cyanide, hexavalent chromium, and total organic carbon. Samples S82, S81S, UG12, FDUG12, FBUG12, and UG16 were analyzed for chloride, nitrite/nitrate, and total organic carbon. All other samples were analyzed for total suspended solids only.

Samples validated in this report are noted below:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-20	36530	05/17/91
S1-20FB	36564	05/17/91
S1-20DUP	36548	05/17/91
S1A-18	36572	05/17/91
S1-21	36653	05/18/91
S1-21FB	36688	05/18/91
S1-21DUP	36661	05/18/91
S1A-19	36696	05/18/91
S1-22	37250	05/19/91
S1-22FB	37285	05/19/91
S1-22	37269	05/19/91
S1A-21	37412	05/20/91
S1-23	37528/37560/37609	05/20/91
S1-23DUP	37536/37579/37617	05/20/91
S1-23FB	37544/37587/37625	05/20/91
S6-23	37552/37595/37633	05/20/91
S1-24FB	37820	05/21/91
S1-24	37790	05/21/91
S1-24DUP	37803	05/21/91
S1A-22	37838	05/21/91
S1-25	38346	05/22/91
S1-25FB	38370	05/22/91
S1-25DUP	38354	05/22/91
S1A-23	38389	05/22/91
S1A-24	38826	05/23/91
S1-26	38788	05/23/91

S1-26FB	38818	05/23/91
S1-26DUP	38796	05/23/91
S1-27	38923	05/24/91
S1-27DUP	38931	05/24/91
S1-27FB	38958	05/24/91
S1A-25	38966	05/24/91
S1-28	39040	05/25/91
S1-28DUP	39059	05/25/91
S1-28FB	39075	05/25/91
S1A-26	39083	05/25/91
S1-29	39164	05/26/91
S1-29FB	39199	05/26/91
S1-29DUP	39172	05/26/91
S1A-27	39202	05/26/91
S1-30	39288	05/27/91
S1-30FB	39318	05/27/91
S1-30DUP	39296	05/27/91
S1A-28	39326	05/27/91
S1A-29	39466	05/23/91
S1-31	39547/39601/39679	05/23/91
S1-31DUP	39555/39610/39687	05/23/91
S1-31FB	39563/39628/39695	05/23/91
S6-31	39571/39636/39709	05/23/91
S1-32	40120	05/29/91
S1-32DUP	40138	05/29/91
S1-32FB	40154	05/29/91
S1A-30	40162	05/29/91
S1-33	40642	05/30/91
S1-33DUP	40650	05/30/91
S1-33FB	40677	05/30/91
S1A-31	40685	05/30/91
S82	40944	05/29/91
S81S	40952	05/29/91
UG12	40960	05/29/91
FDUG12	40979	05/29/91
FBUG12	40995	05/29/91
UG16	41002	05/29/91

The areas reviewed during validation are listed below.

## **Wet Chemistry Data Validation**

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. Matrix Spike Sample Analysis
- V. Duplicate Sample Analysis
- VI. Sample Result Verification
- VII. Other QC
- VIII. Overall Assessment

## Data Validation

### I. Holding Times

All wet chemistry analyses were conducted within acceptable holding times.

### II. Calibration

The correlation coefficient for the calibration curve for sulfate was 0.9878. All positive sulfate results and detection limits were qualified as estimated.

### III. Blanks

Field blank results are summarized below.

<u>Sample (FB)</u>	<u>Parameter</u>	<u>Result (ppm)</u>
S1-23	Nitrate/Nitrite	0.028
	TOC	0.77
	Alkalinity	2
S1-31	Nitrate/Nitrite	0.3
	TOC	0.52
	Alkalinity	1
UG12	Nitrate/Nitrite	0.14
	TOC	0.39

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value.

### IV. Matrix Spike Sample Analysis

Matrix spike analyses were satisfactory except as noted below (Criteria 75%-125%).

<u>Spiked Sample</u>	<u>Parameter</u>	<u>Recovery (%)</u>
S1-23	Nitrate/Nitrite	130
	Chloride	72.5
UG12	Nitrate/Nitrite	10

Positive nitrate/nitrite results for samples associated with S1-23 and UG12 were estimated (J). Detection limits for samples associated with UG12 were rejected (R). Positive chloride results and detection limits associated with S1-23 were estimated (J and UJ).

#### V. Duplicate Sample Analysis

Duplicate results were acceptable except as noted below (Criteria RPD  $\pm$  20%).

<u>Duplicate Sample</u>	<u>Parameter</u>	<u>RPD (%)</u>
S1-23	Nitrate/Nitrite	21
	TOC	29

Positive nitrate/nitrite and TOC results for samples associated with S1-23 were estimated (J).

#### VI. Sample Result Verification

Form I's were correct.

#### VII. Overall Assessment

All data were acceptable with the changes noted above.

UNIFIRST/ENSR

PACE Project Number: 810518501

00079

PACE Sample Number:

95 0036530

Date Collected:

05/17/91

Date Received:

05/18/91

Parameter

Units

MDL

S1-20

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

PACE Sample Number:

95 0036564

Date Collected:

05/17/91

Date Received:

05/18/91

Parameter

Units

MDL

S1-20 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810518501

00080

PACE Sample Number:

95 0036548

Date Collected:

05/17/91

Date Received:

05/18/91

Parameter

Units

MDL

S1-20 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



UNIFIRST/ENSR

PACE Project Number: 810518501

00081

PACE Sample Number:

95 0036572

Date Collected:

05/17/91

Date Received:

05/18/91

Parameter

Units

MDL

S1A-18

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810518502

00082

PACE Sample Number:			95 0036653
Date Collected:			05/18/91
Date Received:			05/18/91
<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>S1-21</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended	mg/L	1	ND
-------------------------	------	---	----

PACE Sample Number:			95 0036688
Date Collected:			05/18/91
Date Received:			05/18/91
<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>S1-21 FB</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended	mg/L	1	ND
-------------------------	------	---	----

MDL      Method Detection Limit  
ND      Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810518502

00083

PACE Sample Number:

95 0036661

Date Collected:

05/18/91

Date Received:

05/18/91

Parameter

Units

MDL

S1-21 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

UNIFIRST/ENSR

PACE Project Number: 810518502

00084

PACE Sample Number:

95 0036696

Date Collected:

05/18/91

Date Received:

05/18/91

Parameter

Units

MDL

S1A-19

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810519501

00085

PACE Sample Number: 95 0037250  
Date Collected: 05/19/91  
Date Received: 05/19/91  
Parameter                      Units                      MDL                      S1-22

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L                      1                      ND

PACE Sample Number: 95 0037285  
Date Collected: 05/19/91  
Date Received: 05/19/91  
Parameter                      Units                      MDL                      S1-22 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L                      1                      ND

MDL                      Method Detection Limit  
ND                      Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810519501

00086

PACE Sample Number:

95 0037269

Date Collected:

05/19/91

Date Received:

05/19/91

Parameter

Units

MDL

S1-22 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810521500 00087

PACE Sample Number:

95 0037412

Date Collected:

05/20/91

Date Received:

05/21/91

Parameter

Units

MDL

S1A-21

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810521500

00088

PACE Sample Number:

95 0037528

Date Collected:

05/20/91

Date Received:

05/21/91

Parameter

Units

MDL

S1-23

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.20

3.0

J

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

1.2

U

for  
7/17/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



UNIFIRST/ENSR

PACE Project Number: 810521500

00089

PACE Sample Number:

95 0037536

Date Collected:

05/20/91

Date Received:

05/21/91

Parameter

Units

MDL S1-23 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.20

3.7

J

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

1.6

U

*pm*  
7/17/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810521500 00090

PACE Sample Number:

95 0037544

Date Collected:

05/20/91

Date Received:

05/21/91

Parameter

Units

MDL

S1-23 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

0.028 J

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

.77

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810520500 1

PACE Sample Number:

95 0037552

Date Collected:

05/20/91

Date Received:

05/21/91

Parameter

Units

MDL

S6-23

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.20

3.9

5

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

.72

u

*per*  
7/17/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810521500

00092

PACE Sample Number:

95 0037560

Date Collected:

05/20/91

Date Received:

05/21/91

Parameter

Units

MDL

S1-23

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L 1 72

Chloride

mg/L 10 249 J

Cyanide, Total, Aqueous

ug/L 10 ND

Fluoride, Total

mg/L 0.1 ND

Silica, dissolved

mg/L 0.2 11.3

Solids, Total Dissolved

mg/L 1 672

Solids, Total Suspended

mg/L 1 ND

Sulfate

mg/L 5 32.6 J

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

*pen*  
7/17/91

UNIFIRST/ENSR

PACE Project Number: 810521500

00093

PACE Sample Number:

95 0037579

Date Collected:

05/20/91

Date Received:

05/21/91

Parameter

Units

MDL

S1-23 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L

1

72

Chloride

mg/L

10

238 J

Cyanide, Total, Aqueous

ug/L

10

ND

Fluoride, Total

mg/L

0.1

ND

Silica, dissolved

mg/L

0.2

11.5

Solids, Total Dissolved

mg/L

1

744

Solids, Total Suspended

mg/L

1

ND

Sulfate

mg/L

5

34.7 J

7/17/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810521500

PACE Sample Number:

95 0037587

00094

Date Collected:

05/20/91

Date Received:

05/21/91

Parameter

Units

MDL

S1-23 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Alkalinity, Total	mg/L	1	2
Chloride	mg/L	1	NDUS
Cyanide, Total, Aqueous	ug/L	10	ND
Fluoride, Total	mg/L	0.1	ND
Silica, dissolved	mg/L	0.2	ND
Solids, Total Dissolved	mg/L	1	ND
Solids, Total Suspended	mg/L	1	ND
Sulfate	mg/L	5	NDUS

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810521500

00095

PACE Sample Number:

95 0037595

Date Collected:

05/20/91

Date Received:

05/21/91

Parameter

Units

MDL

S6-23

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L

1

71

Chloride

mg/L

10

249 U

Cyanide, Total, Aqueous

ug/L

10

ND

Fluoride, Total

mg/L

0.1

ND

Silica, dissolved

mg/L

0.2

11

Solids, Total Dissolved

mg/L

1

718

Solids, Total Suspended

mg/L

1

ND

Sulfate

mg/L

5

31.3 J

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810521500

00096

PACE Sample Number:

95 0037609

Date Collected:

05/20/91

Date Received:

05/21/91

Parameter

Units

MDL

S1-23

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



UNIFIRST/ENSR

PACE Project Number: 810521500

00097

PACE Sample Number:

95 0037617

Date Collected:

05/20/91

Date Received:

05/21/91

Parameter

Units

MDL

S1-23 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810521500

00098

PACE Sample Number:

95 0037625

Date Collected:

05/20/91

Date Received:

05/21/91

Parameter

Units

MDL

S1-23 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810521500

00099

PACE Sample Number:

95 0037633

Date Collected:

05/20/91

Date Received:

05/21/91

Parameter

Units

MDL

S6-23

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01 ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810522501

00100

PACE Sample Number:	95 0037820
Date Collected:	05/21/91
Date Received:	05/22/91
<u>Parameter</u>	<u>Units</u> <u>MDL</u> <u>S1-24 FB</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended	mg/L	1	ND
-------------------------	------	---	----

PACE Sample Number:	95 0037790
Date Collected:	05/21/91
Date Received:	05/22/91
<u>Parameter</u>	<u>Units</u> <u>MDL</u> <u>S1-24</u>

INDIVIDUAL PARAMETERS

Solids, Total Suspended	mg/L	1	ND
-------------------------	------	---	----

PACE Sample Number:	95 0037803
Date Collected:	05/21/91
Date Received:	05/22/91
<u>Parameter</u>	<u>Units</u> <u>MDL</u> <u>S1-24 Dup</u>

INDIVIDUAL PARAMETERS

Solids, Total Suspended	mg/L	1	ND
-------------------------	------	---	----

PACE Sample Number:	95 0037838
Date Collected:	05/21/91
Date Received:	05/22/91
<u>Parameter</u>	<u>Units</u> <u>MDL</u> <u>S1A 22</u>

INDIVIDUAL PARAMETERS

Solids, Total Suspended	mg/L	1	ND
-------------------------	------	---	----

MDL      Method Detection Limit  
ND      Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810523500

00101

PACE Sample Number:

95 0038346

Date Collected:

05/22/91

Date Received:

05/23/91

Parameter

Units

MDL

S1-25

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

PACE Sample Number:

95 0038370

Date Collected:

05/22/91

Date Received:

05/23/91

Parameter

Units

MDL

S1-25 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00102

UNIFIRST/ENSR

PACE Project Number: 810523500

PACE Sample Number:

95 0038354

Date Collected:

05/22/91

Date Received:

05/23/91

Parameter

Units

MDL

S1-25 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00103

UNIFIRST/ENSR

PACE Project Number: 810523500

PACE Sample Number:

95 0038389

Date Collected:

05/22/91

Date Received:

05/23/91

Parameter

Units

MDL

S1A-23

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00105

UNIFIRST/ENSR

PACE Project Number: 810524501

PACE Sample Number:

95 0038826

Date Collected:

05/23/91

Date Received:

05/24/91

Parameter

Units

MDL

S1A-24

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



UNIFIRST/ENSR

PACE Project Number: 810524501

00106

PACE Sample Number:			95 0038788
Date Collected:			05/23/91
Date Received:			05/24/91
<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>S1-26</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L	1	ND
------	---	----

PACE Sample Number:			95 0038818
Date Collected:			05/23/91
Date Received:			05/24/91
<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>S1-26 FB</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L	1	ND
------	---	----

MDL      Method Detection Limit  
ND        Not detected at or above the MDL.

00107

UNIFIRST/ENSR

PACE Project Number: 810524501

PACE Sample Number:

95 0038796

Date Collected:

05/23/91

Date Received:

05/24/91

Parameter

Units

MDL

S1-26 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

00108

UNIFIRST/ENSR

PACE Project Number: 810525500

PACE Sample Number:	95 0038923
Date Collected:	05/24/91
Date Received:	05/25/91
<u>Parameter</u>	<u>Units</u> <u>MDL</u> <u>S1-27</u>

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L	1	ND
------	---	----

PACE Sample Number:	95 0038931
Date Collected:	05/24/91
Date Received:	05/25/91
<u>Parameter</u>	<u>Units</u> <u>MDL</u> <u>S1-27 Dup</u>

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L	1	ND
------	---	----

PACE Sample Number:	95 0038958
Date Collected:	05/24/91
Date Received:	05/25/91
<u>Parameter</u>	<u>Units</u> <u>MDL</u> <u>S1-27 FB</u>

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L	1	ND
------	---	----

PACE Sample Number:	95 0038966
Date Collected:	05/24/91
Date Received:	05/25/91
<u>Parameter</u>	<u>Units</u> <u>MDL</u> <u>S1A-25</u>

INDIVIDUAL PARAMETERS  
Solids, Total Suspended

mg/L	1	ND
------	---	----

MDL      Method Detection Limit  
ND      Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810525501

00109

PACE Sample Number:

95 0039040

Date Collected:

05/25/91

Date Received:

05/25/91

Parameter

Units

MDL

S1-28

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00110

UNIFIRS/ENSR

PACE Project Number: 810525501

PACE Sample Number: 95 0039059  
Date Collected: 05/25/91  
Date Received: 05/25/91  
Parameter Units MDL S1-28 Dup

INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended mg/L 1 ND

PACE Sample Number: 95 0039075  
Date Collected: 05/25/91  
Date Received: 05/25/91  
Parameter Units MDL S1-28 FB

INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended mg/L 1 ND

MDL Method Detection Limit  
ND Not detected at or above the MDL.

00111

UNIFIRS/ENSR

PACE Project Number: 810525501

PACE Sample Number:

95 0039083

Date Collected:

05/25/91

Date Received:

05/25/91

Parameter

Units

MDL

S1A-26

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810526500

00112

PACE Sample Number: 95 0039164  
Date Collected: 05/26/91  
Date Received: 05/26/91  
Parameter Units MDL S1-29

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended mg/L 1 ND

PACE Sample Number: 95 0039199  
Date Collected: 05/26/91  
Date Received: 05/26/91  
Parameter Units MDL S1-29 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS  
Solids, Total Suspended mg/L 1 ND

MDL Method Detection Limit  
ND Not detected at or above the MDL.

00113

UNIFIRST/ENSR

PACE Project Number: 810526500

PACE Sample Number:

95 0039172

Date Collected:

05/26/91

Date Received:

05/26/91.

Parameter

Units

MDL

S1-29 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



00114

UNIFIRST/ENSR

PACE Project Number: 810526500

PACE Sample Number:

95 0039202

Date Collected:

05/26/91

Date Received:

05/26/91

Parameter

Units

MDL

SIA-27

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810527500

00115

PACE Sample Number:	95 0039288
Date Collected:	05/27/91
Date Received:	05/27/91
<u>Parameter</u>	<u>Units</u> <u>MDL</u> <u>S1-30</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended	mg/L	1	ND
-------------------------	------	---	----

PACE Sample Number:	95 0039318
Date Collected:	05/27/91
Date Received:	05/27/91
<u>Parameter</u>	<u>Units</u> <u>MDL</u> <u>S1-30 FB</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended	mg/L	1	ND
-------------------------	------	---	----

MDL      Method Detection Limit  
ND      Not detected at or above the MDL.

00116

UNIFIRST/ENSR

PACE Project Number: 810527500

PACE Sample Number:

95 0039296

Date Collected:

05/27/91

Date Received:

05/27/91

Parameter

Units

MDL

S1-30 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00117

UNIFIRST/ENSR

PACE Project Number: 810527500

PACE Sample Number:

95 0039326

Date Collected:

05/27/91

Date Received:

05/27/91

Parameter

Units

MDL

S1A-28

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

Project# 810529.501

00118

PACE Sample Number:

95 0039466

Date Collected:

05/23/91

Date Received:

05/29/91

ParameterUnitsMDLS1A-29INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

PACE Sample Number:

95 0039547

Date Collected:

05/23/91

Date Received:

05/29/91

ParameterUnitsMDLS1-31

## INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

PACE Sample Number:

95 0039555

Date Collected:

05/23/91

Date Received:

05/29/91

ParameterUnitsMDLS1-31 Dup

## INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

PACE Sample Number:

95 0039563

Date Collected:

05/23/91

Date Received:

05/29/91

ParameterUnitsMDLS1-31 FB

## INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

PACE Sample Number:

95 0039571

Date Collected:

05/23/91

Date Received:

05/29/91

ParameterUnitsMDLS6-31

## INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

Project# 810529.501

00119

PACE Sample Number:

95 0039601

Date Collected:

05/23/91

Date Received:

05/29/91

Parameter

Units

MDL

S1-31

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L

1

71

Chloride

mg/L

10

242

Fluoride, Total

mg/L

0.1

ND

Silica, dissolved

mg/L

0.2

11.2

Solids, Total Dissolved

mg/L

1

608

Solids, Total Suspended

mg/L

1

ND

Sulfate

mg/L

5

29.8

*pm*  
7/17/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00120

UNIFIRST/ENSR

Project# 810529.501

PACE Sample Number:

95 0039610

Date Collected:

05/23/91

Date Received:

05/29/91

ParameterUnitsMDLS1-31 DupINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Alkalinity, Total

mg/L

1

71

Chloride

mg/L

10

238

Fluoride, Total

mg/L

0.1

ND

Silica, dissolved

mg/L

0.2

11.3

Solids, Total Dissolved

mg/L

1

628

Solids, Total Suspended

mg/L

1

ND

Sulfate

mg/L

5

33.6 J

*pm*  
7/17/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00121

UNIFIRST/ENSR

Project# 810529.501

PACE Sample Number:

95 0039628

Date Collected:

05/23/91

Date Received:

05/29/91

ParameterUnitsMDLS1-31 FBINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Alkalinity, Total	mg/L	1	1
Chloride	mg/L	1	ND
Fluoride, Total	mg/L	0.1	ND
Silica, dissolved	mg/L	0.2	ND
Solids, Total Dissolved	mg/L	1	ND

Solids, Total Suspended	mg/L	1	ND
Sulfate	mg/L	5	ND

US

*per*  
7/17/91

MDL      Method Detection Limit  
ND      Not detected at or above the MDL.



00122

UNIFIRST/ENSR

Project# 810529.501

PACE Sample Number:

95 0039636

Date Collected:

05/23/91

Date Received:

05/29/91

ParameterUnitsMDLS6-31INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Alkalinity, Total	mg/L	1	69
Chloride	mg/L	10	249
Fluoride, Total	mg/L	0.1	ND
Silica, dissolved	mg/L	0.2	11
Solids, Total Dissolved	mg/L	1	682
Solids, Total Suspended	mg/L	1	ND
Sulfate	mg/L	5	34.2 J

*pan*  
7/17/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

Project# 810529.501 00123

PACE Sample Number:

95 0039679

Date Collected:

05/23/91

Date Received:

05/29/91

Parameter

Units

MDL

SI-31

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.20

3.4

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

1.1 u

*pm*  
*7/17*

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

Project# 810529.501

00124

PACE Sample Number:

95 0039687

Date Collected:

05/23/91

Date Received:

05/29/91

Parameter

Units

MDL

SI-31 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.20

3.5

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

.97 u

*per*  
7/17/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

Project# 810529.501

00125

PACE Sample Number:

95 0039695

Date Collected:

05/23/91

Date Received:

05/29/91

Parameter

Units

MDL

SI-31 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

0.3

Phosphorus, Total

mg/L

0.3

ND

Total Organic Carbon

mg/L

0.10

.52

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

Project# 810529.501

00126

PACE Sample Number:

95 0039709

Date Collected:

05/23/91

Date Received:

05/29/91

Parameter

Units

MDL

S6-31

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

mg/L

0.20 3.3

Phosphorus, Total

mg/L

0.3 ND

Total Organic Carbon

mg/L

0.10 .84 u

*pen*

7/17/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810530502

00127

PACE Sample Number: 95 0040120  
Date Collected: 05/29/91  
Date Received: 05/30/91  
Parameter Units MDL S1-32

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended mg/L 1 ND

PACE Sample Number: 95 0040138  
Date Collected: 05/29/91  
Date Received: 05/30/91  
Parameter Units MDL S1-32 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended mg/L 1 ND

PACE Sample Number: 95 0040154  
Date Collected: 05/29/91  
Date Received: 05/30/91  
Parameter Units MDL S1-32 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended mg/L 1 ND

PACE Sample Number: 95 0040162  
Date Collected: 05/29/91  
Date Received: 05/30/91  
Parameter Units MDL S1A-30

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended mg/L 1 ND

MDL Method Detection Limit  
ND Not detected at or above the MDL.

## UNIFIRST/ENSR

PACE Project Number: 810531507

PACE Sample Number: 95 0040642  
Date Collected: 05/30/91  
Date Received: 05/31/91  
Parameter                      Units                      MDL                      S1-33

INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L                      1                      ND

PACE Sample Number: 95 0040650  
Date Collected: 05/30/91  
Date Received: 05/31/91  
Parameter                      Units                      MDL                      S1-33 Dup

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L                      1                      ND

PACE Sample Number: 95 0040677  
Date Collected: 05/30/91  
Date Received: 05/31/91  
Parameter                      Units                      MDL                      S1-33 FB

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L                      1                      ND

PACE Sample Number: 95 0040685  
Date Collected: 05/30/91  
Date Received: 05/31/91  
Parameter                      Units                      MDL                      S1A-31

## INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L                      1                      ND

MDL                      Method Detection Limit  
ND                      Not detected at or above the MDL.

Unifirst, Geotrans

PACE Project Number: 810531509

00129

PACE Sample Number:

95 0040944

Date Collected:

05/29/91

Date Received:

05/31/91

Parameter

Units

MDL

S82

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

1

49.0

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

1.6

Total Organic Carbon

mg/L

0.10

17.8

MDL

Method Detection Limit



Unifirst,Geotrans

PACE Project Number: 810531509

00130

PACE Sample Number:

95 0040952

Date Collected:

05/29/91

Date Received:

05/31/91

Parameter

Units

MDL

S818

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

1

35.4

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

1.75

Total Organic Carbon

mg/L

0.10

18.6

*pan*  
7/17/91

MDL

Method Detection Limit

00131

Unifirst, Geotrans

PACE Project Number: 810531509

PACE Sample Number:

95 0040960

Date Collected:

05/29/91

Date Received:

05/31/91

ParameterUnitsMDLUG12INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Chloride

mg/L

1

50.6

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

~~0.024~~ R

Total Organic Carbon

mg/L

0.10

10.9

pan  
7/17/91

MDL

Method Detection Limit

00132

Unifirst, Geotrans

PACE Project Number: 810531509

PACE Sample Number:

95 0040979

Date Collected:

05/29/91

Date Received:

05/31/91

Parameter

Units

MDL

FDUG12

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

1 50.0

Nitrogen, Nitrate plus Nitrite

mg/L

~~0.02~~ ND R

Total Organic Carbon

mg/L

0.10 11.9

*pan*  
*7/17/91*

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00133

Unifirst,Geotrans

PACE Project Number: 810531509

PACE Sample Number:

95 0040995

Date Collected:

05/29/91

Date Received:

05/31/91

ParameterUnitsMDLFBUG12INORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Chloride

mg/L

1

ND

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

0.14

Total Organic Carbon

mg/L

0.10

.39

*pan*  
*7/17/91*

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

Unifirst, Geotrans

PACE Project Number: 810531509

00134

PACE Sample Number:

95 0041002

Date Collected:

05/29/91

Date Received:

05/31/91

Parameter

Units

MDL

UG16

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride

mg/L

10

264

Nitrogen, Nitrate plus Nitrite

mg/L

0.02

~~7.47~~ 1.47 J

Total Organic Carbon

mg/L

1.00

704

*pan*  
*7/17/91*

MDL

Method Detection Limit

00135

Unifirst, Geotrans

PACE Project Number: 810531509

PACE Sample Number:

95 0041010

Date Collected:

05/29/91

Date Received:

05/31/91

ParameterUnitsMDLG01DBINORGANIC ANALYSIS

## INDIVIDUAL PARAMETERS

Chloride

mg/L

10

211

Nitrogen, Nitrate plus Nitrite

mg/L

0.2

3.9

Total Organic Carbon

mg/L

0.10

4.3

5 per 7/17/91

MDL

Method Detection Limit

DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/18/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Treatment system samples from both the UniFirst and W.R. Grace treatment systems were included in this sample delivery group. Data quality for this sample delivery group was good.

Only one set of quality control samples was analyzed with this sample delivery group. UniFirst samples were chosen as the QC samples for this sample delivery group.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



### Case Narrative

Nine samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 18, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-21	3665	05/18/91
S1-21DUP	3666	05/18/91
S1-21TB	3665	05/18/91
S4-19	3672	05/18/91
V131V9FS	3680	05/18/91
V154V9FS	3682	05/18/91
V197V9FS	3683	05/18/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimated in all samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### **A. Initial**

Initial calibration criteria were met on 5/28/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/28/91 with the exception of the % difference for methylene chloride (actual 45.4; criteria 25), acetone (actual 26.1; criteria 25), 2-butanone (actual 37.2; criteria 25), 4-methyl-2-pentanone (actual 40.3; criteria 25), 2-hexanone (actual 42.4; criteria 25), and 1,1,2,2-tetrachloroethane (actual 29.8; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/29/91 (12:42).

Continuing calibration criteria were met on 5/29/91 (23:20) with the exception of the % difference for trans-1,3-dichloropropene (actual 161.8; criteria 25), 4-methyl-2-pentanone (actual 25.6; criteria 25), and 2-hexanone (actual 25.8; criteria 25). Detection limits for trans-1,3-dichloropropene were estimated in Samples S1-21MS and S1-21MSD. Other data were not affected.

## **IV. Blanks**

Acetone was reported in all three method blanks, and methylene chloride was also reported in Method Blank VBLK02. The

results for acetone in Sample V131V9FS was qualified as less than the reported value.

Although not reported on the Form I, 2-butanone was detected in the trip blank and is listed on the quant report. The result for 2-butanone in Sample V131V9FS was rejected due to the blank contamination.

#### **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S1-21. The percent recoveries for 1,1-dichloroethene in the MS and the MSD were below QC criteria. No positive results for 1,1-dichloroethene were reported in field samples; data were not affected.

The compounds 1,2-dichloroethenes and 1,1,1-trichloroethane were in the MS and the MSD but not in Samples S1-21 or S1-21DUP. These compounds were rejected in the MS and MSD.

#### **VII. Field Duplicates**

Compounds and concentrations (in ug/L) reported in Samples S1-21 and S1-21DUP were as follows:

<u>Compound</u>	<u>S1-21</u>	<u>S1-21DUP</u>
Trichloroethene	78	75
Tetrachloroethene	3200	3300

Results were within QC criteria.

#### **VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

#### **IX. TCL Compound Identification**

TCL compound identifications were acceptable.

#### **X. Compound Quantitation and Reported Detection Limits**

Results and detection limits were acceptable with regard to the supporting data, with the exception of the failure to report 2-Butanone on the Form I for the trip blank.

#### **XI. Tentatively Identified Compounds**

No TICs were reported for this SDG.

#### **XII. System Performance**

System performance requires attention. Manual integrations should be addressed.

The holding times for non-preserved samples was exceeded on all samples.

#### **XIII. Overall Assessment of Data for a Case**

Data quality for this sample delivery group was good. Detection limits for aromatic compounds were estimated in all samples.

Detection limits for trans-1,2-dichloropropene were qualified as estimates in S1-21MS and S1-21MSD.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-21

~~00022~~

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3665.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2744

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	200.	U
74-83-9	-----Bromomethane	200.	U
75-01-4	-----Vinyl Chloride	200.	U
75-00-3	-----Chloroethane	200.	U
75-09-2	-----Methylene Chloride	100.	U
67-64-1	-----Acetone	200.	U
75-15-0	-----Carbon Disulfide	100.	U
75-35-4	-----1,1-Dichloroethene	100.	U
75-34-3	-----1,1-Dichloroethane	100.	U
540-59-0	-----1,2-Dichloroethene (total)	100.	U
67-66-3	-----Chloroform	100.	U
107-06-2	-----1,2-Dichloroethane	100.	U
78-93-3	-----2-Butanone	200.	U
71-55-6	-----1,1,1-Trichloroethane	100.	U
56-23-5	-----Carbon Tetrachloride	100.	U
108-05-4	-----Vinyl Acetate	200.	U
75-27-4	-----Bromodichloromethane	100.	U
78-87-5	-----1,2-Dichloropropane	100.	U
10061-01-5	-----cis-1,3-Dichloropropene	100.	U
79-01-6	-----Trichloroethene	78.	J
124-48-1	-----Dibromochloromethane	100.	U
79-00-5	-----1,1,2-Trichloroethane	100.	U
71-43-2	-----Benzene	100.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	100.	U
75-25-2	-----Bromoform	100.	U
108-10-1	-----4-Methyl-2-Pentanone	200.	U
591-78-6	-----2-Hexanone	200.	U
127-18-4	-----Tetrachloroethene	3200.	
79-34-5	-----1,1,2,2-Tetrachloroethane	100.	U
108-88-3	-----Toluene	100.	UJ
108-90-7	-----Chlorobenzene	100.	UJ
100-41-4	-----Ethylbenzene	100.	UJ
100-42-5	-----Styrene	100.	UJ
1330-20-7	-----Xylene (total)	100.	UJ

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-21

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00023

Matrix: (soil/water) WATER

Lab Sample ID: 3665.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2744

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-200029

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3666.1

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2764

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	200.	U
74-83-9	-----Bromomethane	200.	U
75-01-4	-----Vinyl Chloride	200.	U
75-00-3	-----Chloroethane	200.	U
75-09-2	-----Methylene Chloride	100.	U
67-64-1	-----Acetone	200.	U
75-15-0	-----Carbon Disulfide	100.	U
75-35-4	-----1,1-Dichloroethene	100.	U
75-34-3	-----1,1-Dichloroethane	100.	U
540-59-0	-----1,2-Dichloroethene (total)	100.	U
67-66-3	-----Chloroform	100.	U
107-06-2	-----1,2-Dichloroethane	100.	U
78-93-3	-----2-Butanone	200-220.	U
71-55-6	-----1,1,1-Trichloroethane	100.	U
56-23-5	-----Carbon Tetrachloride	100.	U
108-05-4	-----Vinyl Acetate	200.	U
75-27-4	-----Bromodichloromethane	100.	U
78-87-5	-----1,2-Dichloropropane	100.	U
10061-01-5	-----cis-1,3-Dichloropropene	100.	U
79-01-6	-----Trichloroethene	75.	J
124-48-1	-----Dibromochloromethane	100.	U
79-00-5	-----1,1,2-Trichloroethane	100.	U
71-43-2	-----Benzene	100.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	100.	U
75-25-2	-----Bromoform	100.	U
108-10-1	-----4-Methyl-2-Pentanone	200.	U
591-78-6	-----2-Hexanone	200.	U
127-18-4	-----Tetrachloroethene	3300.	
79-34-5	-----1,1,2,2-Tetrachloroethane	100.	U
108-88-3	-----Toluene	100.	UJ
108-90-7	-----Chlorobenzene	100.	UJ
100-41-4	-----Ethylbenzene	100.	UJ
100-42-5	-----Styrene	100.	UJ
1330-20-7	-----Xylene (total)	100.	UJ

OK  
6/27/91



VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

31-21DUP

00031

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3666.1

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2764

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-31TB  
00036

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3667.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2763

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/L
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

cre  
6/27/91

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-21TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

0003

Matrix: (soil/water) WATER

Lab Sample ID: 3667.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2763

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

54-13  
00041

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3672.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2748

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	Q
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	100.	U
75-00-3	Chloroethane	100.	U
75-09-2	Methylene Chloride	50.	U
67-64-1	Acetone	100.	U
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	50.	U
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethene (total)	50.	U
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	45.	J
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	50.	UJ
10061-02-6	Trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachloroethene	1700.	
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	50.	UJ
108-90-7	Chlorobenzene	50.	UJ
100-41-4	Ethylbenzene	50.	UJ
100-42-5	Styrene	50.	UJ
1330-20-7	Xylene (total)	50.	UJ

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S4-19

00042

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3672.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2748

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

V131V9FS

00126

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3680.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2751

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	240.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	73.	U <i>274</i>
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	730.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	<del>110</del>	U <i>R</i>
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	400.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U <i>J</i>
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	41.	J
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U <i>J</i>
108-90-7	-----Chlorobenzene	50.	U <i>J</i>
100-41-4	-----Ethylbenzene	50.	U <i>J</i>
100-42-5	-----Styrene	50.	U <i>J</i>
1330-20-7	-----Xylene (total)	50.	U <i>J</i>

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V131V9FS

00127

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3680.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2751

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	D
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

V15-193FS  
00138

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3683.1

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2762

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	50.	U
74-83-9	-----Bromomethane	50.	U
75-01-4	-----Vinyl Chloride	50.	U
75-00-3	-----Chloroethane	50.	U
75-09-2	-----Methylene Chloride	25.	U
67-64-1	-----Acetone	50.	U
75-15-0	-----Carbon Disulfide	25.	U
75-35-4	-----1,1-Dichloroethene	25.	U
75-34-3	-----1,1-Dichloroethane	25.	U
540-59-0	-----1,2-Dichloroethene (total)	450.	
67-66-3	-----Chloroform	25.	U
107-06-2	-----1,2-Dichloroethane	25.	U
78-93-3	-----2-Butanone	50.	U
71-55-6	-----1,1,1-Trichloroethane	25.	U
56-23-5	-----Carbon Tetrachloride	25.	U
108-05-4	-----Vinyl Acetate	50.	U
75-27-4	-----Bromodichloromethane	25.	U
78-87-5	-----1,2-Dichloropropane	25.	U
10061-01-5	-----cis-1,3-Dichloropropene	25.	U
79-01-6	-----Trichloroethene	440.	
124-48-1	-----Dibromochloromethane	25.	U
79-00-5	-----1,1,2-Trichloroethane	25.	U
71-43-2	-----Benzene	25.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	25.	U
75-25-2	-----Bromoform	25.	U
108-10-1	-----4-Methyl-2-Pentanone	50.	U
591-78-6	-----2-Hexanone	50.	U
127-18-4	-----Tetrachloroethene	25.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	25.	U
108-88-3	-----Toluene	25.	UJ
108-90-7	-----Chlorobenzene	25.	UJ
100-41-4	-----Ethylbenzene	25.	UJ
100-42-5	-----Styrene	25.	UJ
1330-20-7	-----Xylene (total)	25.	UJ



VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

LABORATORY NO.

V154V3FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00137

Matrix: (soil/water) WATER

Lab Sample ID: 3683.1

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2762

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

V197V9FS

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00143

Matrix: (soil/water) WATER

Lab Sample ID: 3682.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2753

Level: (low/med) LOW

Date Received: 5/18/91

Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack./cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	760.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1100.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	220.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	19.	J
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	UJ
108-90-7	-----Chlorobenzene	50.	UJ
100-41-4	-----Ethylbenzene	50.	UJ
100-42-5	-----Styrene	50.	UJ
1330-20-7	-----Xylene (total)	50.	UJ

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V197V9FS

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

0014

Matrix: (soil/water) WATER

Lab Sample ID: 3682.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2753

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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**DATA VALIDATION REPORT**  
**FOR**  
**ENVIRONMENTAL PROJECT CONTROL, INC.**

**WELLS G&H PROJECT**  
**TREATMENT SYSTEMS**  
**VOLATILES ANALYSES DATA**  
**METHOD 524.2 ANALYSES**

**Samples Collected 5/18/91**

**Chemical Analyses Performed By**  
**PACE, Incorporated**

**August 19, 1991**

**By:**

**Trillium, Inc.**  
**7A Grace's Drive**  
**Coatesville, PA 19320**  
**(215) 383-7233**

## EXECUTIVE SUMMARY

With the exception of the field blanks and trip blank, foaming occurred during sample analyses, especially in Samples S5-16, S6-21, and S6-21DUP.

Detection limits for aromatic compounds were estimated in UniFirst samples.

Cooler temperature upon receipt of W.R. Grace samples by the laboratory was 4°C; cooler temperature for the UniFirst samples was also 4°C.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Seven samples were collected and submitted to PACE, Inc. on May 18, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-21FB	3668	05/18/91
S5-16	3673	05/18/91
S6-21	3674	05/18/91
S6-21DUP	3675	05/18/91
S6-21TB	3676	05/18/91
V140V9FS	3679	05/18/91
V140V9FB	3677	05/18/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

Samples from the W.R. Grace treatment plant were preserved with HCl. Holding times were met for all W.R. Grace samples.

Samples from the UniFirst treatment plant were apparently not preserved. All UniFirst samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all UniFirst samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Peaks were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive sample data were affected.

### **A. Initial**

Initial calibration criteria were met on 5/23/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/28/91 with the exception of the % difference for carbon tetrachloride (actual 25.57; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/30/91.

## **IV. Blanks**

The trip blank, field blanks, and method blanks were clean.

## **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.



## VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-19. The percent recoveries for 1,1-dichloroethene, benzene, and toluene were below QC criteria in the MS. Relative percent differences were above QC criteria for 1,1-dichloroethene, trichloroethene, benzene, and toluene. No positive results for these compounds were detected, so no data were qualified.

## VII. Field Duplicates

Samples S6-21 and S6-21DUP were submitted as duplicate samples. No compounds were detected in either sample.

## VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

TCL compound identifications were acceptable.

## X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38

<u>Compound</u>	<u>MDL (ug/L)</u>
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The concentrations of methylene chloride in Samples S5-16 and S6-21TB were below the PQL-determined MDL for this project. These results were corrected to "ND."

All other results and detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were reported for this sample delivery group.

#### **XII. System Performance**

System performance was acceptable.

#### **XIII. Overall Assessment of Data for a Case**

Methylene chloride results were corrected to "ND" in Samples S5-16 and S6-21TB.

Detection limits for aromatic compounds were estimated in all UniFirst samples.

UNIFIRST/ENSR

PACE Project Number: 810518502

PACE Sample Number:

95 0036688 00022

Date Collected:

05/18/91

Date Received:

05/18/91

ParameterUnitsMDLS1-21 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND

cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND

1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND u) 2K8 7/9/91

trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND u)
Chlorobenzene	ug/L	0.5	ND

Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/l.	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810518502

PACE Sample Number:

95 0036734 00032

Date Collected:

05/18/91

Date Received:

05/18/91

ParameterUnitsMDLS5-16ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND uJ
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND uJ
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

LOND 2K8 7/9/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810518502

PACE Sample Number:

95 0036742

Date Collected:

05/18/91

00037

Date Received:

05/18/91

ParameterUnitsMDLS6-21ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND u.s. 2/19/91
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND u.s.
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810518502

PACE Sample Number:

95 0036750

Date Collected:

05/18/91 00041

Date Received:

05/18/91

ParameterUnitsMDLS6-21 DupORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

nd 22b 7/19/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810518502

PACE Sample Number:

95 0036769

Date Collected:

05/18/91

00045

Date Received:

05/18/91

ParameterUnitsMDLS6-21 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	LT ND 2/25/91
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND u)
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND u)
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810518503

PACE Sample Number:

Date Collected:

Date Received:

Parameter

95 0036777

05/18/91

05/18/91

V140 V9 FS

00050

Units

MDL

ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	2.4
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	12.1
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	8.2
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.



W. R. GRACE

PACE Project Number: 810518503

PACE Sample Number:

95 0036793

00057

Date Collected:

05/18/91

Date Received:

05/18/91

Parameter

Units

MDL

V140 V9 FB

ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/19/91

Chemical Analyses Performed By  
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Tetrachloroethene was the only compound detected above the detection limits in the Unifirst samples and vinyl chloride, total 1,2-dichloroethene, and trichloroethene were the only compounds detected in Grace samples. No tentatively identified compounds (TICs) were detected.

Cooler temperatures were 7°C and 10°C. It was unknown which samples (Grace or UniFirst) these temperatures pertained to. Temperatures outside the 4°C  $\pm$  2°C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Eight treatment system samples were collected (both Unifirst and Grace) and submitted for analysis to PACE, Inc. on May 19, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses. V131V10FS was used for the field duplicate, and matrix spike/matrix spike duplicate.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
V131V10FS	3688	05/19/91
V131V10FD	3689	05/19/91
V131V10TB	3690	05/19/91
V197V10FS	3691	05/19/91
V154V10FS	3692	05/19/91
S1-22	3725	05/19/91
S1-22TB	3727	05/19/91
S4-20	3732	05/19/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

### **I. Holding Times**

All sample analyses met holding times.

### **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

### **III. Calibration**

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data were affected.

#### **A. Initial**

Initial calibration criteria were met with the exception of 2-butanone which had an average RRF of 0.077 (criteria 0.1). Detection limits for 2-butanone were rejected.

#### **B. Continuing**

Continuing calibration criteria not met are summarized below.

Date	Time	Compound	RF	%D
5/28	23:13	2-Butanone	0.061 (0.10)	
		Bromomethane		43.8 (25)
		Acetone		31.0 (25)
5/29	11:36	2-Butanone	0.047 (0.10)	
				38.7 (25)
		Bromomethane		49.2 (25)
		2-Methyl-2-pentanone		28.7 (25)
5/29	23:56	2-Butanone	0.041 (0.10)	
				46.3 (25)
		Bromomethane		35.2 (25)
		2-Hexanone		27.2 (25)

( ) Acceptance criteria

Detection limits for 2-butanone were rejected. All other data were not affected.

#### **IV. Blanks**

All blanks were acceptable with the exception of VBLK (5/30) which had tetrachloroethene detected at 4 ppb and V131V10TB which had tetrachloroethene detected at 6 ppb. Tetrachloroethene results were qualified as less than the reported value (U) in V131V10FD.

#### **V. Surrogate Recovery**

All surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.

#### **VII. Field Duplicates**

Vinyl chloride was detected in the sample at 280 ppb, the field duplicate at 320 ppb, in the MS at 280 ppb, and in the MSD at 300 ppb (RSD 6.5). Total 1,2-dichloroethene was detected in the sample at 830 ppb, the field duplicate at 850 ppb, in the MS at 830 ppb, and in the MSD at 850 ppb (RSD 1.4). The data are acceptable.

#### **VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

#### **IX. TCL Compound Identification**

Target compounds were properly identified.

#### **X. Compound Quantitation and Reported Detection Limits**

Detection limits were acceptable with regard to the supporting data.

**XI. Tentatively Identified Compounds**

No TICs were detected.

**XII. System Performance**

System performance was acceptable.

**XIII. Overall Assessment of Data for a Case**

Detection limits for 2-butanone were rejected.



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V101V10F5

00023

6/7/91

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3688.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3176

Level: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

(ug/L or ug/kg) UG/L

Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	280.	U
75-00-3	Chloroethane	100.	U
75-09-2	Methylene Chloride	50.	U
67-64-1	Acetone	100.	U
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	50.	U
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethene (total)	830.	U
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U <sup>2</sup>
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	410.	U
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	50.	U
10061-02-6	Trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachloroethene	50.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	50.	U
108-90-7	Chlorobenzene	50.	U
100-41-4	Ethylbenzene	50.	U
100-42-5	Styrene	50.	U
1330-20-7	Xylene (total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V131V10F5

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00024 6/17/91

Matrix: (soil/water) WATER

Lab Sample ID: 3688.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3176

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131V10FD

Lab Name: PACE

Contract: 00031

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

6/17/91

Matrix: (soil/water) WATER

Lab Sample ID: 3689.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63179

Level: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pad/cap) PACK

Dilution Factor: 10.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	320.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	850.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	420.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	27.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V131V10FD

Lab Name: PACE

Contract:

00032

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

18  
6/17/91

Matrix: (soil/water) WATER

Lab Sample ID: 3689.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3179

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pack/rad) PACE

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

Lab Name: PACE

Contract: 00040

V131V10T8

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

KA 6/17/91

Matrix: (soil/water) WATER

Lab Sample ID: 3690.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3202

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/can) PACK

Dilution Factor: 1.00

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/kg) UG/L	0
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V131V10T8

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00041

14  
6/17/91

Matrix: (soil/water) WATER

Lab Sample ID: 3690.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63202

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/can) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V197V10F3

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

109

6/17/91

Matrix: (soil/water) WATER

Lab Sample ID: 3691.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3180

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	980.	
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	1300.	
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	260.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

0197V10F6

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

6/17/91

Matrix: (soil/water) WATER

Lab Sample ID: 3691.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3180

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pack/can) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V154V10FS

Lab Name: PACE

Contract:

00053

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

18  
6/17/91

Matrix: (soil/water) WATER

Lab Sample ID: 3692.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3181

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	50.	U
74-83-9	-----Bromomethane	50.	U
75-01-4	-----Vinyl Chloride	50.	U
75-00-3	-----Chloroethane	50.	U
75-09-2	-----Methylene Chloride	25.	U
67-64-1	-----Acetone	50.	U
75-15-0	-----Carbon Disulfide	25.	U
75-35-4	-----1,1-Dichloroethene	25.	U
75-34-3	-----1,1-Dichloroethane	25.	U
540-59-0	-----1,2-Dichloroethene (total)	370.	
67-66-3	-----Chloroform	25.	U
107-06-2	-----1,2-Dichloroethane	25.	U
78-93-3	-----2-Butanone	50.	U
71-55-6	-----1,1,1-Trichloroethane	25.	U
56-23-5	-----Carbon Tetrachloride	25.	U
108-05-4	-----Vinyl Acetate	50.	U
75-27-4	-----Bromodichloromethane	25.	U
78-87-5	-----1,2-Dichloropropane	25.	U
10061-01-5	-----cis-1,3-Dichloropropene	25.	U
79-01-6	-----Trichloroethene	360.	
124-48-1	-----Dibromochloromethane	25.	U
79-00-5	-----1,1,2-Trichloroethane	25.	U
71-43-2	-----Benzene	25.	U
10061-02-6	-----Trans-1,3-Dichloropropene	25.	U
75-25-2	-----Bromoform	25.	U
108-10-1	-----4-Methyl-2-Pentanone	50.	U
591-78-6	-----2-Hexanone	50.	U
127-18-4	-----Tetrachloroethene	25.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	25.	U
108-88-3	-----Toluene	25.	U
108-90-7	-----Chlorobenzene	25.	U
100-41-4	-----Ethylbenzene	25.	U
100-42-5	-----Styrene	25.	U
1330-20-7	-----Xylene (total)	25.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

V154V10F3

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

00054

SDG No.:

6/7/91

Matrix: (soil/water) WATER

Lab Sample ID: 3692.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3181

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pack/cap) PACE

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-22

00122

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3725.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63182

Level: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L 0

74-87-3	-----Chloromethane	200.	U
74-83-9	-----Bromomethane	200.	U
75-01-4	-----Vinyl Chloride	200.	U
75-00-3	-----Chloroethane	200.	U
75-09-2	-----Methylene Chloride	100.	U
67-64-1	-----Acetone	23.	J
75-15-0	-----Carbon Disulfide	100.	U
75-35-4	-----1,1-Dichloroethene	100.	U
75-34-3	-----1,1-Dichloroethane	100.	U
540-59-0	-----1,2-Dichloroethene (total)	100.	U
67-66-3	-----Chloroform	100.	U
107-06-2	-----1,2-Dichloroethane	100.	U
78-93-3	-----2-Butanone	200.	U R
71-55-6	-----1,1,1-Trichloroethane	100.	U
56-23-5	-----Carbon Tetrachloride	100.	U
108-05-4	-----Vinyl Acetate	200.	U
75-27-4	-----Bromodichloromethane	100.	U
78-87-5	-----1,2-Dichloropropane	100.	U
10061-01-5	-----cis-1,3-Dichloropropene	100.	U
79-01-6	-----Trichloroethene	100.	U
124-48-1	-----Dibromochloromethane	100.	U
79-00-5	-----1,1,2-Trichloroethane	100.	U
71-43-2	-----Benzene	100.	U
10061-02-6	-----Trans-1,3-Dichloropropene	100.	U
75-25-2	-----Bromoform	100.	U
108-10-1	-----4-Methyl-2-Pentanone	200.	U
591-78-6	-----2-Hexanone	200.	U
127-18-4	-----Tetrachloroethene	3300.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	100.	U
108-88-3	-----Toluene	100.	U
108-90-7	-----Chlorobenzene	100.	U
100-41-4	-----Ethylbenzene	100.	U
100-42-5	-----Styrene	100.	U
1330-20-7	-----Xylene (total)	100.	U

6/25/91

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

51-20

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00123

Matrix: (soil/water) WATER

Lab Sample ID: 3725.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63182

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

91-27TB

00129

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3727.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3217

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACE

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

TENTATIVELY IDENTIFIED COMPOUNDS

SI-22TR

00130

Lab Name: RACE

Contract:

Lab Code: RACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: soil/water) WATER

Lab Sample ID: 3727.7

sample wt/vol: 5. (g/ml) ML

Lab File ID: 63217

level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/30/91

column: (back/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S4-20

00134

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3732.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63186

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not det.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACE

Dilution Factor: 10.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/kg) UG/L

0

74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	100.	U
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	34.	J
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	50.	U
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	HR
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	50.	U
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	2000.	A
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

10/6/25/91

VOLEATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S4-20

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00135

Matrix: (soil/water) WATER

Lab Sample ID: 3732.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3186

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Columns: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEMS  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/19/91

Chemical Analyses Performed By  
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Detection limits for aromatic compounds were estimated in UniFirst samples.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Eight samples were collected and submitted to PACE, Inc. on May 19, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
V140V10FS	3684	05/19/91
V140V10FD	3685	05/19/91
V140V10FB	3686	05/19/91
V140V10TB	3687	05/19/91
S1-22FB	3728	05/19/91
S5-17	3733	05/19/91
S6-22	3734	05/19/91
S6-22TB	3736	05/19/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

Samples from the W.R. Grace treatment plant were preserved with HCl and catalase. Holding times were met for all W.R. Grace samples.

Samples from the UniFirst treatment plant were apparently not preserved. All UniFirst samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all UniFirst samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Peaks were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive sample data were affected.

### **A. Initial**

Initial calibration criteria were met on 5/23/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/29/91.

## **IV. Blanks**

The trip blanks, field blanks, and method blanks were clean.

## **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample V140V10FS. The Relative percent difference was above QC criteria for 1,1-dichloroethene. No positive results for this compound were detected, so no data were qualified.

#### VII. Field Duplicates

Samples V140V10FS and V140V10FD were submitted as duplicate samples. Compounds and concentrations (in ug/L) reported were as follows:

<u>Compound</u>	<u>V140V10FS</u>	<u>V140V10FD</u>	<u>MS</u>	<u>MSD</u>
Chloroethane	1.5	1.7	1.6	1.5
cis-1,2-Dichloroethene	0.9		1.2	
Trichloroethene	0.6		NA	NA

Since trichloroethene is one of the spiking compounds, trichloroethene results for the MS and MSD were not applicable to the duplicate analysis.

Chloroethane results were acceptable as reported. Results for cis-1,2-dichloroethene and trichloroethene were rejected in V140V10FS.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The concentrations of methylene chloride in Sample S6-22TB was below the PQL-determined MDL for this project. This result was corrected to "ND."

The result for 1,1,1-trichloroethane in Sample S5-17 (30 ug/L) was beyond the calibration range of the instrument. This result met precision and accuracy criteria and was acceptable as reported.

All other results and detection limits were acceptable with regard to the supporting data.

#### **XI. Tentatively Identified Compounds**

No TICs were reported for this sample delivery group.

## **XII. System Performance**

System performance was acceptable.

## **XIII. Overall Assessment of Data for a Case**

The methylene chloride result in Sample S6-22TB was corrected to "ND."

Detection limits for aromatic compounds were estimated in all UniFirst samples.

Results for trichloroethene and cis-1,2-dichloroethene were rejected for Sample V140V10FS.



W. R. GRACE

PACE Project Number: 08009200

PACE Sample Number:

95 0036840

Date Collected:

05/19/91

Date Received:

05/19/91

V140 V10

Parameter

Units

MDL

FS

ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	1.5
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	<del>0.5</del>	<del>0.9</del>
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	<del>0.5</del>	<del>0.6</del>
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

2KJ  
7/9/10

MDL Method Detection Limit

ND Not detected at or above the MDL.

W. R. GRACE

PACE Project Number 810519500  
00038

PACE Sample Number:

95 0036858

Date Collected:

05/19/91

Date Received:

05/19/91

V140 V10

Parameter

Units

MDL

FD

ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	1.7
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810519500 00040

PACE Sample Number:

95 0036866

Date Collected:

05/19/91

Date Received:

05/19/91

V140 V10

Parameter

Units

MDL

FB

ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

W. R. GRACE

PACE Project Number: 810519500 00044

PACE Sample Number: 95 0036874  
Date Collected: 05/19/91  
Date Received: 05/19/91  
V140 V10

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>TB</u>
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ORGANIC ANALYSIS

VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit  
ND Not detected at or above the MDL.

00048

UNIFIRST/ENSR

PACE Project Number: 810519501

PACE Sample Number:

95 0037285

Date Collected:

05/19/91

Date Received:

05/19/91

ParameterUnitsMDLSI-22 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND <i>as 2K 1/14/91</i>
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND <i>as</i>
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810519501

00052

PACE Sample Number:

95 0037331

Date Collected:

05/19/91

Date Received:

05/19/91

ParameterUnitsMDLS5-17ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	1.7
1,1-Dichloroethane	ug/L	0.5	3.2
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	30
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

ND 6/7/91

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

00059

UNIFIRST/ENSR

PACE Project Number: 810519501

PACE Sample Number:

95 0037340

Date Collected:

05/19/91

Date Received:

05/19/91

ParameterUnitsMDLS6-22ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND <i>WJ EKS 7/19/91</i>
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND <i>WJ</i>
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810519501

00063

PACE Sample Number:

95 0037366

Date Collected:

05/19/91

Date Received:

05/19/91

ParameterUnitsMDLS6-22 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	1.2 ND 2K3 7/9/10
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND u}
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND u}
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.



DATA VALIDATION REPORT

FOR

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

SEMIVOLATILES ANALYSIS DATA  
Samples Collected May 19, 1991

Chemical Analyses Performed by:

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

No target compound list (TCL) compounds were detected in Samples V131S10FS, V131S10FD, V131S10FB, or V140S10FS. No tentatively identified compounds were observed in any of the samples in this SDG. Results for 4-nitroaniline and 3,3'-dichlorobenzidine are rejected in all four samples. Detection limits for 3-nitroaniline are estimated in all four samples. The detection limit for pyrene is estimated in V131S10FS, V131S10FD, and V131S10FB.

Problems identified on the Chain of Custody (COC) records include: (1) 7 COC's are included although only 1 is pertinent to this data package; (2) affiliations are not included with any of the transfer signatures; (3) the signature of the sampler at the top of the form includes only a first initial-the full name should be signed here; (4) cold storage of the samples is not documented; and (5) separate entries should not be made for MS/MSD samples.

Validation of the data package is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying Form I's copied from the data package to qualify some of the results as appropriate based on the findings of the data review.

## Case Narrative

Six water samples (including separate samples for matrix spike/matrix spike duplicate) were collected on May 19, 1991 and received by Pace, Inc. on the same date. Analysis of semivolatile organic compounds according to EPA Contract Laboratory Program (CLP) Statement of Work 2/88 was performed.

The following samples are included in this Sample Delivery Group (SDG):

<u>Client ID</u>	<u>Lab ID</u>	<u>Collection Date</u>
V131S10FD	3695	5/19/91
V131S10FS	3694	5/19/91
V131S10FB	3696	5/19/91
V140S10FS	3693	5/19/91

Semivolatiles analysis results for these samples were reported by the laboratory under Project Number 810519.500.

## Semivolatiles

The areas reviewed during the semivolatiles validation procedure are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples were extracted and analyzed within the established holding times.

The COC records do not indicate that the samples were placed in cold storage in the field, at the time of collection. It can be inferred that the samples were placed in coolers from the notations of cooler temperatures made on 5/20/91 on the COC's. Cold storage is a form of preservation and must be documented, or the validator must assume it was not performed. No qualifiers are applied to the results in this case.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be done as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No internal standard (IS) or surrogate peaks were manually integrated; data do not appear to be affected.

### **A. Initial**

All samples in this SDG were analyzed under an initial calibration (IC) performed on 6/19/91. All criteria were met for this calibration with the exception of the Percent Relative Standard Deviation (%RSD) for 4-chloroaniline (37.5), 3-nitroaniline (41.4), and 3,3'-dichlorobenzidine (44.7). No data are affected.

### **B. Continuing**

The samples in this SDG were run under two continuing calibration (CC) standards, on 6/20/91 and 6/21/91. Criteria were met for the 6/20 calibration with the exception of the RF's for 4-nitroaniline (0.046) and 3,3'-dichlorobenzidine (0.033), both of which were below the minimum required RF of 0.05, and the %D for 3,3'-dichlorobenzidine (56.2), 2,4-dinitrophenol (43.8), 4-nitroaniline (45.4), 3-nitroaniline (56.9), and pyrene (50.7). Results for 4-nitroaniline and 3,3'-dichlorobenzidine were rejected in Samples V131S10FS, V131S10FD, and V131S10FB; detection limits

for 3-nitroaniline and pyrene are estimated "UJ" in the same three samples.

All criteria were met in the 6/21/91 calibration except the RF's for 4-nitroaniline (0.045) and 3,3'-dichlorobenzidine (0.048), and the %D for 3-nitroaniline (64.2), 2,4-dinitrophenol (43.8), 2,4-dinitrotoluene (26.6), 4-nitroaniline (46.4), and 3,3'-dichlorobenzidine (36.8). Results for 4-nitroaniline and 3,3'-dichlorobenzidine were rejected in Sample V140S10FS, and detection limits for 3-nitroaniline were estimated in this sample.

#### **IV. Blanks**

No target or tentatively identified compounds were detected in SBLK1, extracted 5/24 and analyzed 6/21.

No target compounds or reportable TIC's were detected in the field blank, V131S10FB.

#### **V. Surrogate Recovery**

Form II contains two listings for V131S10FD and no listing for V131S10FB; based on comparison to the raw data, it is clear that entry #5 should be identified as V131S10FB.

Surrogate recoveries were within established QC criteria except for 2-fluorobiphenyl in V131S10FS and the MSD of this sample; both of these were low (34% and 40%, respectively) relative to the acceptable QC range of 43-116%. Recoveries in the paired field duplicate (V131S10FD) were consistently higher, and the reported results are the same for both samples. No data are qualified on this basis.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample V131S10FS. All Percent Recovery (%R) and Relative Percent Difference (RPD) values were within established QC criteria except %R for acenaphthene in MS (43%, QC 46-118%) and RPD for pyrene (41%, QC 31%). Pyrene has already been estimated in the unspiked sample V131S10FS; no additional qualifiers are applied.

#### **VII. Field Duplicates**

Samples V131S10FS and V131S10FD were field duplicates. No target analytes or TIC's were detected in these samples.

### VIII. Internal Standards Performance

On Form VIII, there are two entries for Sample V131S10FS and no entry found for V131S10FB; based on review of internal standard areas in the raw data, it has been determined that entry #5 actually represents the field blank, V131S10FB.

All internal standard areas and retention times were within the established QC limits for acceptance in Samples V131S10FD and V131S10FB. In V131S10FS and the MS/MSD, one or more IS areas are outside the QC criteria on the high side. This may be related to a distinct drop noted in the areas of the later-eluting IS peaks between the IC standards and the CC standards. No reruns were performed. Sensitivity does not appear to be seriously affected, and no positive results are reported for these samples; no data are qualified on this basis. It is recommended that the laboratory investigate this variability in IS areas.

### IX. TCL Compound Identification

No TCL compounds were identified in any of the samples in this SDG.

### X. Compound Quantitation and Reported Detection Limits

Results and quantitation limits are correctly reported; no dilutions were performed in this SDG.

### XI. Tentatively Identified Compounds

No tentatively identified compounds were reported in any of the samples in this SDG.

### XII. System Performance

No system performance problems were observed in the raw data presented in this data package, with the possible exception of the variable IS areas observed for the later-eluting IS peaks between the IC standards and the CC standards. Specifically:

	<u>Area-IS#5</u>	<u>Area-IS#6</u>
IC-File 2712	160428	101222
IC-File 2716	79274	48767
IC-File 2717	134463	73694
IC-File 2718	174429	112175
IC-File 2719	126733	79752

CC Std-6/20/91  
CC Std-6/21/91

65645  
87424

32522  
56939



Recommend that the laboratory watch these areas closely in future work to avoid problems with quantitative data that may be generated.

#### XIII. Overall Assessment

Sample results are usable as reported with the following exceptions:

1. CRQLs for 4-nitroaniline and 3,3'-dichlorobenzidine are rejected in all samples due to low RF's.

2. Detection limits for 3-nitroaniline are estimated in all samples due to a high %D in both continuing calibrations; detection limits for pyrene are estimated in V131S10FS, V131S10FD, and V131S10FB due to a high %D in the first continuing calibration.

Incomplete, unclear, or inaccurate Chain of Custody (COC) records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the COC records included in this data package:

1. More custody records are included than are pertinent to this package; this could cause confusion as to the disposition of the rest of the data requested on the COC's.

2. Transfer signatures are incomplete: the affiliation of the person involved is not included for any of the signatures.

3. The signature and the written name of the sampler at the top of the form should be a full name, not first initial only.

4. Cold storage is not documented, except for references to cooler temperatures added to the COC's on 5/20/91.

5. MS/MSD analyses are a laboratory-initiated quality control activity; there should not be separate samples on the COC identified as "MS" and "MSD".

Manually integrated areas should be documented in the data package to allow review of the integration method used.



1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

V131S10F5 8

00023

6/25/91

Lab Name: PACE Contract: SDG No.:  
Lab Code: PACE Case No.: EPC SAS No.:  
Matrix: (soil/water) WATER Lab Sample ID: 3696.3  
Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2763  
Level: (low/med) LOW Date Received: 5/19/91  
% Moisture: not dec.100. dec. 0. Date Extracted: 5/24/91  
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/21/91  
Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

108-95-2-----	Phenol	10.	U
111-44-4-----	bis(2-Chloroethyl) ether	10.	U
95-57-8-----	2-Chlorophenol	10.	U
541-73-1-----	1,3-Dichlorobenzene	10.	U
106-46-7-----	1,4-Dichlorobenzene	10.	U
100-51-6-----	Benzyl alcohol	10.	U
95-50-1-----	1,2-Dichlorobenzene	10.	U
95-48-7-----	2-Methylphenol	10.	U
108-60-1-----	bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----	4-Methylphenol	10.	U
621-64-7-----	N-Nitroso-di-n-propylamine	10.	U
67-72-1-----	Hexachloroethane	10.	U
98-95-3-----	Nitrobenzene	10.	U
78-59-1-----	Isophorone	10.	U
88-75-5-----	2-Nitrophenol	10.	U
105-67-9-----	2,4-Dimethylphenol	10.	U
65-85-0-----	Benzoic acid	50.	U
111-91-1-----	bis(2-Chloroethoxy) methane	10.	U
120-83-2-----	2,4-Dichlorophenol	10.	U
120-82-1-----	1,2,4-Trichlorobenzene	10.	U
91-20-3-----	Naphthalene	10.	U
106-47-8-----	4-Chloroaniline	10.	U
87-68-3-----	Hexachlorobutadiene	10.	U
59-50-7-----	4-Chloro-3-methylphenol	10.	U
91-57-6-----	2-Methylnaphthalene	10.	U
77-47-4-----	Hexachlorocyclopentadiene	10.	U
88-06-2-----	2,4,6-Trichlorophenol	10.	U
95-95-4-----	2,4,5-Trichlorophenol	50.	U
91-58-7-----	2-Chloronaphthalene	10.	U
88-74-4-----	2-Nitroaniline	50.	U
131-11-3-----	Dimethylphthalate	10.	U
208-96-8-----	Acenaphthylene	10.	U
606-20-2-----	2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V131S10R\$ 6

Lab Name: PACE

Contract:

00024

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

1m1  
6/25/91

Matrix: (soil/water) WATER

Lab Sample ID: 3696.3

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2763

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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99-09-2-----	3-Nitroaniline	50.	U
83-32-9-----	Acenaphthene	10.	U
51-28-5-----	2,4-Dinitrophenol	50.	U
100-02-7-----	4-Nitrophenol	50.	U
132-64-9-----	Dibenzofuran	10.	U
121-14-2-----	2,4-Dinitrotoluene	10.	U
84-66-2-----	Diethylphthalate	10.	U
7005-72-3-----	4-Chlorophenyl-phenylether	10.	U
86-73-7-----	Fluorene	10.	U
100-01-6-----	4-Nitroaniline	50.	U R
534-52-1-----	4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----	N-Nitrosodiphenylamine	10.	U
101-55-3-----	4-Bromophenyl-phenylether	10.	U
118-74-1-----	Hexachlorobenzene	10.	U
87-86-5-----	Pentachlorophenol	50.	U
85-01-8-----	Phenanthrene	10.	U
120-12-7-----	Anthracene	10.	U
84-74-2-----	Di-n-butylphthalate	10.	U
206-44-0-----	Fluoranthene	10.	U
129-00-0-----	Pyrene	10.	U
85-68-7-----	Butylbenzylphthalate	10.	U
91-94-1-----	3,3'-Dichlorobenzidine	20.	U R
56-55-3-----	Benzo(a)anthracene	10.	U
218-01-9-----	Chrysene	10.	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----	Di-n-octylphthalate	10.	U
205-99-2-----	Benzo(b)fluoranthene	10.	U
207-08-9-----	Benzo(k)fluoranthene	10.	U
50-32-8-----	Benzo(a)pyrene	10.	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----	Dibenzo(a,h)anthracene	10.	U
191-24-2-----	Benzo(g,h,i)perylene	10.	U

caE  
7/5/91

(1) - Cannot be separated from diphenylamine

FORM I SV-2

1/87 Rev.

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V131S10F\$ 8

Lab Name: PACE

Contract:

00025

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

MM/ 6/25/91

Matrix: (soil/water) WATER

Lab Sample ID: 3696.3

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2763

Level: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

EPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

V131S1FD-  
V131S10FD

Lab Name: PACE

Conf # 2-9

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

MI

matrix: (soil/water) WATER

Lab Sample ID: 3695.5

sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2757

Level: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

PC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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108-95-2-----	Phenol	10.	U
111-44-4-----	bis(2-Chloroethyl) ether	10.	U
95-57-8-----	2-Chlorophenol	10.	U
541-73-1-----	1,3-Dichlorobenzene	10.	U
106-46-7-----	1,4-Dichlorobenzene	10.	U
100-51-6-----	Benzyl alcohol	10.	U
95-50-1-----	1,2-Dichlorobenzene	10.	U
95-48-7-----	2-Methylphenol	10.	U
108-60-1-----	bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----	4-Methylphenol	10.	U
621-64-7-----	N-Nitroso-di-n-propylamine	10.	U
67-72-1-----	Hexachloroethane	10.	U
98-95-3-----	Nitrobenzene	10.	U
78-59-1-----	Isophorone	10.	U
88-75-5-----	2-Nitrophenol	10.	U
105-67-9-----	2,4-Dimethylphenol	10.	U
65-85-0-----	Benzoic acid	50.	U
111-91-1-----	bis(2-Chloroethoxy) methane	10.	U
120-83-2-----	2,4-Dichlorophenol	10.	U
120-82-1-----	1,2,4-Trichlorobenzene	10.	U
91-20-3-----	Naphthalene	10.	U
106-47-8-----	4-Chloroaniline	10.	U
87-68-3-----	Hexachlorobutadiene	10.	U
59-50-7-----	4-Chloro-3-methylphenol	10.	U
91-57-6-----	2-Methylnaphthalene	10.	U
77-47-4-----	Hexachlorocyclopentadiene	10.	U
88-06-2-----	2,4,6-Trichlorophenol	10.	U
95-95-4-----	2,4,5-Trichlorophenol	50.	U
91-58-7-----	2-Chloronaphthalene	10.	U
88-74-4-----	2-Nitroaniline	50.	U
131-11-3-----	Dimethylphthalate	10.	U
208-96-8-----	Acenaphthylene	10.	U
606-20-2-----	2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

Lab Name: PACE

Contract:  
00030

V131S1FD  
V131S10 FD

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

FU1  
6/25/91

Matrix: (soil/water) WATER

Lab Sample ID: 3695.5

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2757

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

99-09-2-----	3-Nitroaniline	50.	U
83-32-9-----	Acenaphthene	10.	U
51-28-5-----	2,4-Dinitrophenol	50.	U
100-02-7-----	4-Nitrophenol	50.	U
132-64-9-----	Dibenzofuran	10.	U
121-14-2-----	2,4-Dinitrotoluene	10.	U
84-66-2-----	Diethylphthalate	10.	U
7005-72-3-----	4-Chlorophenyl-phenylether	10.	U
86-73-7-----	Fluorene	10.	U
100-01-6-----	4-Nitroaniline	50.	U
534-52-1-----	4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----	N-Nitrosodiphenylamine	10.	U
101-55-3-----	4-Bromophenyl-phenylether	10.	U
118-74-1-----	Hexachlorobenzene	10.	U
87-86-5-----	Pentachlorophenol	50.	U
85-01-8-----	Phenanthrene	10.	U
120-12-7-----	Anthracene	10.	U
84-74-2-----	Di-n-butylphthalate	10.	U
206-44-0-----	Fluoranthene	10.	U
129-00-0-----	Pyrene	10.	U
85-68-7-----	Butylbenzylphthalate	10.	U
91-94-1-----	3,3'-Dichlorobenzidine	20.	U
56-55-3-----	Benzo(a)anthracene	10.	U
218-01-9-----	Chrysene	10.	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----	Di-n-octylphthalate	10.	U
205-99-2-----	Benzo(b)fluoranthene	10.	U
207-08-9-----	Benzo(k)fluoranthene	10.	U
50-32-8-----	Benzo(a)pyrene	10.	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----	Dibenzo(a,h)anthracene	10.	U
191-24-2-----	Benzo(g,h,i)perylene	10.	U

QAE  
7/5/91

(1) - Cannot be separated from diphenylamine

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

FPA SAMPLE NO.

Lab Name: PACE Contract: 00031  
Lab Code: PACE Case No.: EPC SAS No.: SDG No.:  
Matrix: (soil/water) WATER Lab Sample ID: 3695.5  
Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2757  
Level: (low/med) LOW Date Received: 5/19/91  
Moisture: not dec.100. dec. 0. Date Extracted: 5/24/91  
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/21/91  
GC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

Lab Name: PACE

Contract: 00035

V131S10F5

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

*MU*

Matrix: (soil/water) WATER

Lab Sample ID: 3694.7

*6/25/91*

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2760

Level: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

108-95-2-----	Phenol	10.	U
111-44-4-----	bis(2-Chloroethyl) ether	10.	U
95-57-8-----	2-Chlorophenol	10.	U
541-73-1-----	1,3-Dichlorobenzene	10.	U
106-46-7-----	1,4-Dichlorobenzene	10.	U
100-51-6-----	Benzyl alcohol	10.	U
95-50-1-----	1,2-Dichlorobenzene	10.	U
95-48-7-----	2-Methylphenol	10.	U
108-60-1-----	bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----	4-Methylphenol	10.	U
621-64-7-----	N-Nitroso-di-n-propylamine	10.	U
67-72-1-----	Hexachloroethane	10.	U
98-95-3-----	Nitrobenzene	10.	U
78-59-1-----	Isophorone	10.	U
88-75-5-----	2-Nitrophenol	10.	U
105-67-9-----	2,4-Dimethylphenol	10.	U
65-85-0-----	Benzoic acid	50.	U
111-91-1-----	bis(2-Chloroethoxy) methane	10.	U
120-83-2-----	2,4-Dichlorophenol	10.	U
120-82-1-----	1,2,4-Trichlorobenzene	10.	U
91-20-3-----	Naphthalene	10.	U
106-47-8-----	4-Chloroaniline	10.	U
87-68-3-----	Hexachlorobutadiene	10.	U
59-50-7-----	4-Chloro-3-methylphenol	10.	U
91-57-6-----	2-Methylnaphthalene	10.	U
77-47-4-----	Hexachlorocyclopentadiene	10.	U
88-06-2-----	2,4,6-Trichlorophenol	10.	U
95-95-4-----	2,4,5-Trichlorophenol	50.	U
91-58-7-----	2-Chloronaphthalene	10.	U
88-74-4-----	2-Nitroaniline	50.	U
131-11-3-----	Dimethylphthalate	10.	U
208-96-8-----	Acenaphthylene	10.	U
606-20-2-----	2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

Lab Name: PACE

Contract:

V131S10Fs

Lab Code: PACE

Case No.: EPC

SAS No.:

00036

SDG No.:

ml  
6/25/91

Matrix: (soil/water) WATER

Lab Sample ID: 3694.7

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2760

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

IPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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99-09-2-----	3-Nitroaniline	50.	U
83-32-9-----	Acenaphthene	10.	U
51-28-5-----	2,4-Dinitrophenol	50.	U
100-02-7-----	4-Nitrophenol	50.	U
132-64-9-----	Dibenzofuran	10.	U
121-14-2-----	2,4-Dinitrotoluene	10.	U
84-66-2-----	Diethylphthalate	10.	U
7005-72-3-----	4-Chlorophenyl-phenylether	10.	U
86-73-7-----	Fluorene	10.	U
100-01-6-----	4-Nitroaniline	50.	U
534-52-1-----	4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----	N-Nitrosodiphenylamine	10.	U
101-55-3-----	4-Bromophenyl-phenylether	10.	U
118-74-1-----	Hexachlorobenzene	10.	U
87-86-5-----	Pentachlorophenol	50.	U
85-01-8-----	Phenanthrene	10.	U
120-12-7-----	Anthracene	10.	U
84-74-2-----	Di-n-butylphthalate	10.	U
206-44-0-----	Fluoranthene	10.	U
129-00-0-----	Pyrene	10.	U
85-68-7-----	Butylbenzylphthalate	10.	U
91-94-1-----	3,3'-Dichlorobenzidine	20.	U
56-55-3-----	Benzo(a)anthracene	10.	U
218-01-9-----	Chrysene	10.	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----	Di-n-octylphthalate	10.	U
205-99-2-----	Benzo(b)fluoranthene	10.	U
207-08-9-----	Benzo(k)fluoranthene	10.	U
50-32-8-----	Benzo(a)pyrene	10.	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----	Dibenzo(a,h)anthracene	10.	U
191-24-2-----	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

FORM I SV-2

1/87 Rev.



1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

FPA SAMPLE NO.

V131S10FS

Lab Name: PACE

Contract:

00037

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

MM 6/25/91

Matrix: (soil/water) WATER

Lab Sample ID: 3694.7

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2760

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

V140S10FS

Lab Name: PACE Contract: 00041  
Lab Code: PACE Case No.: EPC SAS No.: SDG No.:  
Matrix: (soil/water) WATER Lab Sample ID: 3693.9  
Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2766  
Level: (low/med) LOW Date Received: 5/19/91  
Moisture: not dec.100. dec. 0. Date Extracted: 5/24/91  
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/21/91  
GC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

MM  
6/25/91

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

108-95-2-----	Phenol	10.	U
111-44-4-----	bis(2-Chloroethyl) ether	10.	U
95-57-8-----	2-Chlorophenol	10.	U
541-73-1-----	1,3-Dichlorobenzene	10.	U
106-46-7-----	1,4-Dichlorobenzene	10.	U
100-51-6-----	Benzyl alcohol	10.	U
95-50-1-----	1,2-Dichlorobenzene	10.	U
95-48-7-----	2-Methylphenol	10.	U
108-60-1-----	bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----	4-Methylphenol	10.	U
621-64-7-----	N-Nitroso-di-n-propylamine	10.	U
67-72-1-----	Hexachloroethane	10.	U
98-95-3-----	Nitrobenzene	10.	U
78-59-1-----	Isophorone	10.	U
88-75-5-----	2-Nitrophenol	10.	U
105-67-9-----	2,4-Dimethylphenol	10.	U
65-85-0-----	Benzoic acid	50.	U
111-91-1-----	bis(2-Chloroethoxy) methane	10.	U
120-83-2-----	2,4-Dichlorophenol	10.	U
120-82-1-----	1,2,4-Trichlorobenzene	10.	U
91-20-3-----	Naphthalene	10.	U
106-47-8-----	4-Chloroaniline	10.	U
87-68-3-----	Hexachlorobutadiene	10.	U
59-50-7-----	4-Chloro-3-methylphenol	10.	U
91-57-6-----	2-Methylnaphthalene	10.	U
77-47-4-----	Hexachlorocyclopentadiene	10.	U
88-06-2-----	2,4,6-Trichlorophenol	10.	U
95-95-4-----	2,4,5-Trichlorophenol	50.	U
91-58-7-----	2-Chloronaphthalene	10.	U
88-74-4-----	2-Nitroaniline	50.	U
131-11-3-----	Dimethylphthalate	10.	U
208-96-8-----	Acenaphthylene	10.	U
606-20-2-----	2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V140S10F5

Sample Name: PACE Contract: 00042  
 Lab Code: PACE Case No.: EPC SAS No.: SDG No.:  
 Matrix: (soil/water) WATER Lab Sample ID: 3693.9  
 Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2766  
 Level: (low/med) LOW Date Received: 5/19/91  
 % Moisture: not dec.100. dec. 0. Date Extracted: 5/24/91  
 Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/21/91  
 CPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
 (ug/L or ug/Kg) UG/L Q

99-09-2-----	3-Nitroaniline	50.	U
83-32-9-----	Acenaphthene	10.	U
51-28-5-----	2,4-Dinitrophenol	50.	U
100-02-7-----	4-Nitrophenol	50.	U
132-64-9-----	Dibenzofuran	10.	U
121-14-2-----	2,4-Dinitrotoluene	10.	U
84-66-2-----	Diethylphthalate	10.	U
7005-72-3-----	4-Chlorophenyl-phenylether	10.	U
86-73-7-----	Fluorene	10.	U
100-01-6-----	4-Nitroaniline	50.	U
534-52-1-----	4,6-Dinitro-2-methylphenol	50.	U
86-30-6-----	N-Nitrosodiphenylamine	10.	U
101-55-3-----	4-Bromophenyl-phenylether	10.	U
118-74-1-----	Hexachlorobenzene	10.	U
87-86-5-----	Pentachlorophenol	50.	U
85-01-8-----	Phenanthrene	10.	U
120-12-7-----	Anthracene	10.	U
84-74-2-----	Di-n-butylphthalate	10.	U
206-44-0-----	Fluoranthene	10.	U
129-00-0-----	Pyrene	10.	U
85-68-7-----	Butylbenzylphthalate	10.	U
91-94-1-----	3,3'-Dichlorobenzidine	20.	U
56-55-3-----	Benzo(a)anthracene	10.	U
218-01-9-----	Chrysene	10.	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0-----	Di-n-octylphthalate	10.	U
205-99-2-----	Benzo(b)fluoranthene	10.	U
207-08-9-----	Benzo(k)fluoranthene	10.	U
50-32-8-----	Benzo(a)pyrene	10.	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3-----	Dibenzo(a,h)anthracene	10.	U
191-24-2-----	Benzo(g,h,i)perylene	10.	U

R

CO2

9/5/91

R

(1) - Cannot be separated from diphenylamine

FORM I SV-2

1/87 Rev.

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V140S10F5

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

00043

SDG No.:

DM/ 6/25/91

Matrix: (soil/water) WATER

Lab Sample ID: 3693.9

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2766

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/20/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Data quality for this sample delivery group was good. Detection limits for aromatic compounds were qualified as estimated in all samples. Detection limits for 2-butanone were rejected in all samples.

Upon receipt of samples by the laboratory, cooler temperatures ranged from 10°C to 14°C. Cooler temperatures outside the 4°C  $\pm$  2°C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Eight samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 20, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-23	3737	05/20/91
S1-23DUP	3738	05/20/91
S1-23TB	3739	05/20/91
S2-21	3769	05/20/91
S3-21	3743	05/20/91
S4-21	3744	05/20/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



## **I. Holding Times**

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimated in all samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### **A. Initial**

Initial calibration criteria were met on 5/28/91 with the exception of the RRF for 2-butanone (actual 0.077; criteria 0.1). Detection limits for 2-butanone were rejected in all samples.

### **B. Continuing**

Continuing calibration criteria were met on 5/29/91 (11:36) with the exception of the RF for 2-butanone (actual 0.047; criteria 0.1) and the % difference for bromomethane (actual 49.2; criteria 25), 2-butanone (actual 38.7; criteria 25), 4-methyl-2-pentanone (actual 28.7; criteria 25), and 2-hexanone (actual 27.7; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/29/91 (23:56) with the exception of the RF for 2-butanone (actual 0.041; criteria 0.1) and the % difference for bromomethane (actual 34.2; criteria 25), 2-butanone (actual 46.3; criteria 25), 4-methyl-2-pentanone (actual 25.5; criteria 25), and 2-hexanone (actual 27.5; criteria 25). Data were not affected.

## **IV. Blanks**

Method blanks and the trip blank were clean.

#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S1-23. The percent recoveries for 1,1-dichloroethene in the MS and the MSD were below QC criteria. No positive results for 1,1-dichloroethene were reported in field samples; data were not affected.

#### VII. Field Duplicates

Compounds and concentrations (in ug/L) reported in Samples S1-23 and S1-23DUP were as follows:

<u>Compound</u>	<u>S1-21</u>	<u>S1-21DUP</u>
1,1-Dichloroethane		34
Trichloroethene	78	75
Tetrachloroethene	3200	3300

The compound 1,1-dichloroethane was crossed out on the quant report for S1-23DUP but apparently inadvertently reported on the Form I. This compound is rejected for Sample S1-23DUP. Other results were within QC criteria.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

Results and detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were reported for this SDG.

## **XII. System Performance**

System performance requires attention. Manual integrations should be addressed. Holding time for non preserved samples was exceeded on all samples.

## **XIII. Overall Assessment of Data for a Case**

Data quality for this sample delivery group was good. Detection limits for aromatic compounds were estimated in all samples. Detection limits for 2-butanone were rejected in all samples.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-23

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3737.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3203 0000022

Level: (low/med) LOW

Date Received: 5/21/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	200.	U
74-83-9	Bromomethane	200.	U
75-01-4	Vinyl Chloride	200.	U
75-00-3	Chloroethane	200.	U
75-09-2	Methylene Chloride	100.	U
67-64-1	Acetone	200.	U
75-15-0	Carbon Disulfide	100.	U
75-35-4	1,1-Dichloroethene	100.	U
75-34-3	1,1-Dichloroethane	100.	U
540-59-0	1,2-Dichloroethene (total)	100.	U
67-66-3	Chloroform	100.	U
107-06-2	1,2-Dichloroethane	100.	U
78-93-3	2-Butanone	200.	U R
71-55-6	1,1,1-Trichloroethane	100.	U
56-23-5	Carbon Tetrachloride	100.	U
108-05-4	Vinyl Acetate	200.	U
75-27-4	Bromodichloromethane	100.	U
78-87-5	1,2-Dichloropropane	100.	U
10061-01-5	cis-1,3-Dichloropropene	100.	U
79-01-6	Trichloroethene	81.	J
124-48-1	Dibromochloromethane	100.	U
79-00-5	1,1,2-Trichloroethane	100.	U
71-43-2	Benzene	100.	U J
10061-02-6	Trans-1,3-Dichloropropene	100.	U
75-25-2	Bromoform	100.	U
108-10-1	4-Methyl-2-Pentanone	200.	U
591-78-6	2-Hexanone	200.	U
127-18-4	Tetrachloroethene	3500.	
79-34-5	1,1,2,2-Tetrachloroethane	100.	U
108-88-3	Toluene	100.	U J
108-90-7	Chlorobenzene	100.	U J
100-41-4	Ethylbenzene	100.	U J
100-42-5	Styrene	100.	U J
1330-20-7	Xylene (total)	100.	U J

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-23

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3737.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63203

Level: (low/med) LOW

Date Received: 5/21/91 0000023

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

S1-23DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3738.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3220 0000029

Level: (low/med) LOW

Date Received: 5/21/91

Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 30.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	300.	U
74-83-9	-----Bromomethane	300.	U
75-01-4	-----Vinyl Chloride	300.	U
75-00-3	-----Chloroethane	300.	U
75-09-2	-----Methylene Chloride	150.	U
67-64-1	-----Acetone	300.	U
75-15-0	-----Carbon Disulfide	150.	U
75-35-4	-----1,1-Dichloroethene	150.	U
75-34-3	-----1,1-Dichloroethane	24.	JK
540-59-0	-----1,2-Dichloroethene (total)	150.	U
67-66-3	-----Chloroform	150.	U
107-06-2	-----1,2-Dichloroethane	150.	U
78-93-3	-----2-Butanone	300.	U
71-55-6	-----1,1,1-Trichloroethane	150.	U
56-23-5	-----Carbon Tetrachloride	150.	U
108-05-4	-----Vinyl Acetate	300.	U
75-27-4	-----Bromodichloromethane	150.	U
78-87-5	-----1,2-Dichloropropane	150.	U
10061-01-5	-----cis-1,3-Dichloropropene	150.	U
79-01-6	-----Trichloroethene	85.	J
124-48-1	-----Dibromochloromethane	150.	U
79-00-5	-----1,1,2-Trichloroethane	150.	U
71-43-2	-----Benzene	150.	UJ
10061-02-6	-----Trans-1,3-Dichloropropene	150.	U
75-25-2	-----Bromoform	150.	U
108-10-1	-----4-Methyl-2-Pentanone	300.	U
591-78-6	-----2-Hexanone	300.	U
127-18-4	-----Tetrachloroethene	2100.	
79-34-5	-----1,1,2,2-Tetrachloroethane	150.	U
108-88-3	-----Toluene	150.	UJ
108-90-7	-----Chlorobenzene	150.	UJ
100-41-4	-----Ethylbenzene	150.	UJ
100-42-5	-----Styrene	150.	UJ
1330-20-7	-----Xylene (total)	150.	UJ

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TELEPHONELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-23DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3738.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3220 0000030

Level: (low/med) LOW

Date Received: 5/21/91

Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 30.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

S1-23 TB

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3739.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63222

0000036

Level: (low/med) LOW

Date Received: 5/21/91

% Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
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74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	10.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U R
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U J
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U J
108-90-7	-----Chlorobenzene	5.	U J
100-41-4	-----Ethylbenzene	5.	U J
100-42-5	-----Styrene	5.	U J
1330-20-7	-----Xylene(total)	5.	U J



VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

LABORATORY NO.

S1-23 TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3739.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63222 0000037

Level: (low/med) LOW

Date Received: 5/21/91

% Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S2-21

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3742.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3221 0000041

Level: (low/med) LOW

Date Received: 5/21/91

% Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	g
74-87-3	-----Chloromethane	50.	U
74-83-9	-----Bromomethane	50.	U
75-01-4	-----Vinyl Chloride	50.	U
75-00-3	-----Chloroethane	50.	U
75-09-2	-----Methylene Chloride	25.	U
67-64-1	-----Acetone	50.	U
75-15-0	-----Carbon Disulfide	25.	U
75-35-4	-----1,1-Dichloroethene	25.	U
75-34-3	-----1,1-Dichloroethane	25.	U
540-59-0	-----1,2-Dichloroethene (total)	25.	U
67-66-3	-----Chloroform	25.	U
107-06-2	-----1,2-Dichloroethane	25.	U
78-93-3	-----2-Butanone	50.	U
71-55-6	-----1,1,1-Trichloroethane	25.	U
56-23-5	-----Carbon Tetrachloride	25.	U
108-05-4	-----Vinyl Acetate	50.	U
75-27-4	-----Bromodichloromethane	25.	U
78-87-5	-----1,2-Dichloropropane	25.	U
10061-01-5	-----cis-1,3-Dichloropropene	25.	U
79-01-6	-----Trichloroethene	18.	J
124-48-1	-----Dibromochloromethane	25.	U
79-00-5	-----1,1,2-Trichloroethane	25.	U
71-43-2	-----Benzene	25.	U
10061-02-6	-----Trans-1,3-Dichloropropene	25.	U
75-25-2	-----Bromoform	25.	U
108-10-1	-----4-Methyl-2-Pentanone	50.	U
591-78-6	-----2-Hexanone	50.	U
127-18-4	-----Tetrachloroethene	840.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	25.	U
108-88-3	-----Toluene	25.	U
108-90-7	-----Chlorobenzene	25.	U
100-41-4	-----Ethylbenzene	25.	U
100-42-5	-----Styrene	25.	U
1330-20-7	-----Xylene(total)	25.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S2-21

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3742.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3221 0000042

Level: (low/med) LOW

Date Received: 5/21/91

% Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

SA SAMPLE NO.

S3-21

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3743.9 0000040

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3223

Level: (low/med) LOW

Date Received: 5/21/91

Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	100.	U
74-83-9-----	Bromomethane	100.	U
75-01-4-----	Vinyl Chloride	100.	U
75-00-3-----	Chloroethane	100.	U
75-09-2-----	Methylene Chloride	50.	U
67-64-1-----	Acetone	100.	U
75-15-0-----	Carbon Disulfide	50.	U
75-35-4-----	1,1-Dichloroethene	50.	U
75-34-3-----	1,1-Dichloroethane	50.	U
540-59-0-----	1,2-Dichloroethene (total)	50.	U
67-66-3-----	Chloroform	50.	U
107-06-2-----	1,2-Dichloroethane	50.	U
78-93-3-----	2-Butanone	100.	U R
71-55-6-----	1,1,1-Trichloroethane	50.	U
56-23-5-----	Carbon Tetrachloride	50.	U
108-05-4-----	Vinyl Acetate	100.	U
75-27-4-----	Bromodichloromethane	50.	U
78-87-5-----	1,2-Dichloropropane	50.	U
10061-01-5-----	cis-1,3-Dichloropropene	50.	U
79-01-6-----	Trichloroethene	35.	J
124-48-1-----	Dibromochloromethane	50.	U
79-00-5-----	1,1,2-Trichloroethane	50.	U
71-43-2-----	Benzene	50.	U J
10061-02-6-----	Trans-1,3-Dichloropropene	50.	U
75-25-2-----	Bromoform	50.	U
108-10-1-----	4-Methyl-2-Pentanone	100.	U
591-78-6-----	2-Hexanone	100.	U
127-18-4-----	Tetrachloroethene	920.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	50.	U
108-88-3-----	Toluene	50.	U J
108-90-7-----	Chlorobenzene	50.	U J
100-41-4-----	Ethylbenzene	50.	U J
100-42-5-----	Styrene	50.	U J
1330-20-7-----	Xylene (total)	50.	U J

1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S3-21

Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 0000050

Matrix: (soil/water) WATER

Lab Sample ID: 3743.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3223

Level: (low/med) LOW

Date Received: 5/21/91

Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S4-21

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3744.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 632240000055

Level: (low/med) LOW

Date Received: 5/21/91

% Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	100.	U
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	50.	U
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U <sup>R</sup>
71-55-6	-----1,1,1-Trichloroethane	44.	J
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	73.	U
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U <sup>J</sup>
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	1900.	U <sup>B</sup>
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U <sup>J</sup>
108-90-7	-----Chlorobenzene	50.	U <sup>J</sup>
100-41-4	-----Ethylbenzene	50.	U <sup>J</sup>
100-42-5	-----Styrene	50.	U <sup>J</sup>
1330-20-7	-----Xylene(total)	50.	U <sup>J</sup>

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S4-21

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3744.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63224 0000056

Level: (low/med) LOW

Date Received: 5/21/91

% Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA  
METHOD 524.2 ANALYSES

Samples Collected 5/20/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233



## EXECUTIVE SUMMARY

Data quality for this sample delivery group was good. Methylene chloride results in three samples were corrected to "ND" because the results reported were below the MDL determined by the PQL study for this project.

The samples in this sample delivery group were to have been preserved with catalase and HCl. Although it is believed that the samples were preserved, no notation was made on chain of custody forms or any other documentation presented in this data package. The data validator was, therefore, required to treat these samples as nonpreserved samples.

Cooler temperatures upon receipt of samples by the laboratory were 10°C to 14°C. Temperatures outside the range of 4°C  $\pm$  2°C may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

### Case Narrative

Five treatment system samples were collected and submitted to PACE, Inc. on May 20, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-23FB	3740	05/20/91
S5-18	3745	05/20/91
S6-23	3746	05/20/91
S6-23DUP	3747	05/20/91
S6-23TB	3748	05/20/91

## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

These samples were to have been preserved with catalase and HCL, but no notation was made regarding either preservative on the chain of custody forms or other documentation in this data package. The data validator was, therefore, required to treat these samples as unpreserved samples.

All samples were analyzed outside the 7-day holding time but within the 14-day holding time for nonpreserved samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No sample data appear to be affected.

### **A. Initial**

Initial calibration criteria were met on 5/23/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/30/91.

## **IV. Blanks**

The trip blank, field blank, and method blanks were clean.

## **V. Surrogate Recovery**

Surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-23. Data were within acceptance criteria.

#### VII. Field Duplicates

Samples S6-23 and S6-23DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

<u>Compound</u>	<u>MDL (ug/L)</u>
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42

<u>Compound</u>	<u>MDL (ug/L)</u>
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Methylene chloride was reported in Samples S5-18, S6-23, and S6-23DUP at concentrations below the MDL determined by the PQL study for this project. Methylene chloride concentrations in these three samples were corrected to be "ND."

The result reported for 1,1,1-trichloroethane in Sample S5-18 (32 ug/L) was beyond the calibration range of the instrument (25 ug/L). This result was qualified as estimated.

All other results and detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

#### XII. System Performance

System performance was acceptable.

#### XIII. Overall Assessment of Data for a Case

Detection limits for aromatic compounds were qualified as estimated in all samples. It is believed that samples in this sample delivery group were preserved; however, no documentation was provided.

Methylene chloride was corrected to be "ND" in Samples S5-18, S6-23, and S6-23DUP.

UNIFIRST/ENSR

PACE Project Number: 810521500

PACE Sample Number: -----

95 0037404 00025

Date Collected:

05/20/91

Date Received:

05/21/91

ParameterUnitsMDLSI-23 FBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

EKD  
7/7/91

UNIFIRST/ENSR

PACE Project Number: 810521500

PACE Sample Number:

95 0037455 00029

Date Collected:

05/20/91

Date Received:

05/21/91

ParameterUnitsMDLS5-18ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	<del>1.2</del> ND
1,1-Dichloroethene	ug/L	0.5	1.4
1,1-Dichloroethane	ug/L	0.5	3.8
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	32J
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND uJ
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	2.5
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND uJ
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

2KJ  
7/7/91

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



UNIFIRST/ENSR

PACE Project Number: 810521500

PACE Sample Number:

95 0037463 00026

Date Collected:

05/20/91

Date Received:

05/21/91

ParameterUnitsMDLS6-23ORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND

cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND

1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND u

trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND u
Chlorobenzene	ug/L	0.5	ND

Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit  
ND Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810521500

PACE Sample Number:

95 0037471

00043

Date Collected:

05/20/91

Date Received:

05/21/91

ParameterUnitsMDLS6-23 DupORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND u
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND u
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

17 ND 243 1/7/91

ND u  
|

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810521500

PACE Sample Number:

95 0037480 00048

Date Collected:

05/20/91

Date Received:

05/21/91

ParameterUnitsMDLS6-23 TBORGANIC ANALYSIS

## VOLATILE ORGANICS BY 524.2 MODIFIED

Vinyl chloride	ug/L	0.5	ND
Chloroethane	ug/L	0.5	ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Benzene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	ND

exd  
7/7/91

u)

I

MDL

Method Detection Limit

ND

Not detected at or above the MDL.



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
INORGANIC ANALYSES DATA

Samples Collected 5/20/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

Results were qualified as estimated for barium, antimony in S1-23FB, arsenic in S1-23, lead, magnesium, sodium, and thallium.

Zinc results were qualified as less than their reported values.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: Analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets  
to qualify some of the results.

Inorganic Data Validation  
for  
Environmental Project Control, Inc.  
Samples Collected 5/20/91

Case Narrative

This group contained five water samples including one field blank. The samples were analyzed for total metals and cyanide except for S1A-21 and S2-21 which were analyzed for only iron and manganese.

Samples validated in this report are noted below:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-23	3764	5/20/91
S1-23FB	3766	5/20/91
S1A-21	3768	5/20/91
S2-21	3769	5/20/91
S6-23	3767	5/20/91

The areas reviewed during validation are listed below.

**CLP Inorganics Data Validation**

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
- IX. ICP Serial Dilution Analysis
- X. Detection Limits
- XI. Sample Result Verification
- XII. Overall Assessment



## **Data Validation**

### **I. Holding Times**

Samples were analyzed within acceptable holding times.

### **II. Calibration**

The CRDL recoveries for chromium were 150% and 130%. Since no chromium was detected, no data were qualified.

### **III. Blanks**

A continuing calibration blank contained zinc at 3.0 ug/L while the preparation blank had a response of -3.0 ug/L which was less than the negative IDL. No data were qualified.

Zinc was found in the field blank above its CRDL (20 ug/L) at 34.0 ug/L. Zinc results were qualified as less than their reported values.

Lead was found in the preparation blank at 2.3 ug/L. Since no lead was found in the samples, no data were qualified.

### **IV. ICP Interference Check Sample**

The ICS results were satisfactory.

### **V. Matrix Spike Sample Analysis**

Matrix spike analyses were conducted on S1-23. Results were out of acceptable limits for barium (9%) and thallium (66%). Barium and thallium results were qualified as estimated.

### **VI. Duplicate Sample Analysis**

Duplicate analyses were conducted on S1-23. Results were satisfactory.

### **VII. Laboratory Control Sample Analysis**

LCS results were satisfactory.

#### VIII. Furnace Atomic Absorption Analysis

Analytical spike recoveries were out of acceptable limits for:

<u>Metal</u>	<u>Sample</u>	<u>% Recovery</u>
Antimony	S1-23FB	75
Arsenic	S1-23	118
Lead	S1-23	80
Lead	S6-23	74
Thallium	S1-23	70
Thallium	S6-23	75

These results were qualified estimated.

#### IX. ICP Serial Dilution Analysis

Correspondence of serial dilution analyses were out of acceptable limits for magnesium (16%) and sodium (13%). Magnesium and sodium results were qualified estimated.

#### X. Detection Limits

IDL's were less than the CRDL's.

#### XI. Sample Result Verification

Calculations were performed correctly.

#### XII. Overall Assessment

Data were considered valid with the following exceptions:

Zinc results were qualified as less than their reported values due to contamination in the field blank.

Barium and thallium results were qualified as estimated based on matrix spike recoveries.

Due to poor analytical spike recoveries, results were qualified estimated for antimony in S1-23FB, arsenic in S1-23, lead in S1-23 and S6-23, and thallium in S1-23 and S6-23.

Magnesium and sodium results were qualified estimated due to serial dilution results.

DATA SUMMARY FORM: INORGANICS

Page 1 of 1

Site Name. Wells G & H

WATER SAMPLES  
(ug/L)

Case # 810521.500 Sampling Date(s): 5/20/91

Sample No. Dilution Factor Location Lab ID	3764&3756		3766		3768		3769		3767&3759									
	1		1		1		1		1									
	S1-23		S1-23FB		S1A-21		S2-21		S6-23									
CRDL																		
200	Aluminum					N/R		N/R										
60	Antimony			0.8	UJ	N/R		N/R										
10	*Arsenic	1.0	UJ			N/R		N/R										
200	Barium	17.0	J			N/R		N/R		18.0	J							
5	Beryllium					N/R		N/R										
5	*Cadmium					N/R		N/R										
5000	Calcium	90500				N/R		N/R		90500								
10	*Chromium					N/R		N/R										
50	Cobalt					N/R		N/R										
25	Copper	10.0				N/R		N/R		6.0								
100	Iron	215				2360												
3	*Lead	0.5	UJ			N/R		N/R		0.5	UJ							
5000	Magnesium	10700	J			N/R		N/R		10000	J							
15	Manganese					24.0		2.0										
0.2	Mercury					N/R		N/R										
40	*Nickel					N/R		N/R										
5000	Potassium	2570				N/R		N/R		2960								
5	Selenium					N/R		N/R										
10	Silver					N/R		N/R										
5000	Sodium	76600	J			N/R		N/R		79700	J							
10	Thallium	0.6	UJ			N/R		N/R		0.6	UJ							
50	Vanadium					N/R		N/R		5.0								
20	Zinc	122	U		34.0	N/R		N/R		120	U							
10	*Cyanide					N/R		N/R										

\*Action Level Exists

N/R = Not Required

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET  
00021

EPA SAMPLE NO.

S1-23

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 3764.1

Level (low/med): LOW

Date Received: 05/21/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U	<del>WJ</del>	F
7440-39-3	Barium	17.0	<del>B</del>	<del>WJ</del>	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	90500			P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	10	<del>B</del>		P
7439-89-6	Iron	215			P
7439-92-1	Lead	0.50	U	<del>WJ</del>	F
7439-95-4	Magnesium	10700		<del>J</del>	P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	2570	<del>B</del>		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	76600		<del>WJ</del>	P
7440-28-0	Thallium	0.60	U	<del>WJ</del>	F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	122		<del>U</del>	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00022

S1-23

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 3756.0

Level (low/med): LOW

Date Received: 05/21/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide	10	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET  
00023

EPA SAMPLE NO.

S1-23FB

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER Lab Sample ID: 3766.8

Level (low/med): LOW Date Received: 05/21/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U	WJ	F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	12.5	U		P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	448	U		P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	0.50	U		F
7439-95-4	Magnesium	509	U		P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	760	U		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	390	U		P
7440-28-0	Thallium	0.60	U		F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	34.0			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00024

S1-23FB

Lab Name: PACE\_INCORPORATED\_\_\_\_\_

Contract: EPC\_\_\_\_\_

Lab Code: \_\_\_\_\_

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: \_\_\_\_\_

Matrix (soil/water): WATER

Lab Sample ID: 3758.7\_\_\_\_\_

Level (low/med): LOW\_\_

Date Received: 05/21/91

% Solids: \_\_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide	10	U		AS

Color Before: COLORLESS

Clarity Before: CLEAR\_

Texture: \_\_\_\_\_

Color After: COLORLESS

Clarity After: CLEAR\_

Artifacts: \_\_\_\_\_

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

S1A-21

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: 3768.4

Level (low/med): LOW

Date Received: 05/21/91

% Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron	2360			P
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	24.0			P
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:



1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

S2-21

Lab Name: PACE\_INCORPORATED Contract: EPC

Lab Code: Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER Lab Sample ID: 3769.2

Level (low/med): LOW Date Received: 05/21/91

Solids: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	2.0	B		P
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET  
00027

EPA SAMPLE NO.

S6-23

Lab Name: PACE\_INCORPORATED\_\_\_\_\_ Contract: EPC\_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix (soil/water): WATER

Lab Sample ID: 3767.6\_\_\_\_\_

Level (low/med): LOW\_\_

Date Received: 05/21/91

% Solids: \_\_\_\_\_ 0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	U		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	18.0	B	XJ	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	90500	U		P
7440-47-3	Chromium	9.5	U		P
7440-48-4	Cobalt	6.4	U		P
7440-50-8	Copper	6.0	B		P
7439-89-6	Iron	97.7	U		P
7439-92-1	Lead	0.50	U	XJ	F
7439-95-4	Magnesium	10000	U	J	P
7439-96-5	Manganese	1.5	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	2960	B		P
7782-49-2	Selenium	0.50	U		F
7440-22-4	Silver	8.1	U		P
7440-23-5	Sodium	79700	U	EJ	P
7440-28-0	Thallium	0.60	U	WNJ	F
7440-62-2	Vanadium	5.0	B		P
7440-66-6	Zinc	120	U		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR\_ Texture: \_\_\_\_\_

Color After: COLORLESS Clarity After: CLEAR\_ Artifacts: \_\_\_\_\_

Comments:

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## U.S. EPA - CLP

1  
INORGANIC ANALYSES DATA SHEET  
00028

EPA SAMPLE NO.

S6-23

Lab Name: PACE\_INCORPORATED\_\_\_\_\_ Contract: EPC\_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix (soil/water): WATER

Lab Sample ID: 3759.5\_\_\_\_\_

Level (low/med): LOW\_\_\_\_\_

Date Received: 05/21/91

% Solids: \_\_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_\_\_\_\_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum		-		NR
7440-36-0	Antimony		-		NR
7440-38-2	Arsenic		-		NR
7440-39-3	Barium		-		NR
7440-41-7	Beryllium		-		NR
7440-43-9	Cadmium		-		NR
7440-70-2	Calcium		-		NR
7440-47-3	Chromium		-		NR
7440-48-4	Cobalt		-		NR
7440-50-8	Copper		-		NR
7439-89-6	Iron		-		NR
7439-92-1	Lead		-		NR
7439-95-4	Magnesium		-		NR
7439-96-5	Manganese		-		NR
7439-97-6	Mercury		-		NR
7440-02-0	Nickel		-		NR
7440-09-7	Potassium		-		NR
7782-49-2	Selenium		-		NR
7440-22-4	Silver		-		NR
7440-23-5	Sodium		-		NR
7440-28-0	Thallium		-		NR
7440-62-2	Vanadium		-		NR
7440-66-6	Zinc		-		NR
	Cyanide	10	U		AS

Color Before: COLORLESS Clarity Before: CLEAR\_\_\_\_\_ Texture: \_\_\_\_\_

Color After: COLORLESS Clarity After: CLEAR\_\_\_\_\_ Artifacts: \_\_\_\_\_

Comments:



DATA VALIDATION REPORT

FOR

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

SEMIVOLATILES ANALYSIS DATA  
Samples Collected May 20, 1991

Chemical Analyses Performed by:

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

No semivolatile target compounds were detected in Samples S1-23, S1-23 FB, or S6-23. The only reported tentatively identified compound, in Sample S1-23, was rejected. Detection limits for 4-nitroaniline and 3,3'-dichlorobenzidine were rejected in all three samples; detection limits for 3-nitroaniline were estimated in all three samples. The detection limit for pyrene was estimated in Sample S1-23.

Problems identified on the Chain of Custody (COC) records include: (1) 3 COC's are included although only 2 are pertinent to this data package; (2) affiliations are not included with any of the transfer signatures; (3) cold storage of the samples is not documented; (4) separate entries should not be made for MS/MSD samples; and (5) documentation of corrections is inconsistent. In addition, the Case Narrative states that the samples were received at the laboratory on May 20, 1991; it is clear from the COC records that the samples did not arrive until May 21, 1991.

Validation of the data package is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying Form I's copied from the data packages to qualify some of the results as appropriate based on the findings of the data review.

### Case Narrative

Five water samples (including separate samples for matrix spike/matrix spike duplicate) were collected on May 20, 1991 and received by Pace, Inc. on May 21, 1991. Analysis of semivolatile organic compounds according to EPA Contract Laboratory Program (CLP) Statement of Work 2/88 was performed.

The following samples are included in this Sample Delivery Group (SDG):

<u>Client ID</u>	<u>Lab ID</u>	<u>Collection Date</u>
S1-23	3749	5/20/91
S1-23 FB	3750	5/20/91
S6-23	3751	5/20/91

Semivolatiles analysis results for these samples were reported by the laboratory under Project Number 810521.500.

## Semivolatiles



The areas reviewed during the semivolatiles validation procedure are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

## **I. Holding Times**

All samples were extracted and analyzed within the established holding times.

The COC records do not indicate that the samples were placed in cold storage in the field, at the time of collection. It can be inferred that the samples were placed in coolers from the notations of cooler temperatures made on 5/21/91 on the COC's. Cold storage is a form of preservation and must be documented, or the validator must assume it was not performed. No qualifiers are applied to the results in this case.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be done as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No internal standard (IS) or surrogate peaks were manually integrated; data do not appear to be affected.

### **A. Initial**

All samples in this SDG were analyzed under an initial calibration (IC) performed on 6/19/91. All criteria were met for this calibration with the exception of the Percent Relative Standard Deviation (%RSD) for 4-chloroaniline (37.5), 3-nitroaniline (41.4), and 3,3'-dichlorobenzidine (44.7). No data are affected.

### **B. Continuing**

The samples in this SDG were also run under two continuing calibration (CC) standards, on 6/20/91 and 6/21/91. Criteria were met for the 6/20 calibration with the exception of the RF's for 4-nitroaniline (0.046) and 3,3'-dichlorobenzidine (0.033), both of which were below the minimum required RF of 0.05, and the %D for 3,3'-dichlorobenzidine (56.2), 2,4-dinitrophenol (43.8), 4-nitroaniline (45.4), 3-nitroaniline (56.9), and pyrene (50.7). Detection limits for 4-nitroaniline and 3,3'-dichlorobenzidine were rejected in Sample S1-23; detection limits for 3-nitroaniline and pyrene are estimated "UJ" in the same sample.



All criteria were met in the 6/21/91 calibration except the RF's for 4-nitroaniline (0.045) and 3,3'-dichlorobenzidine (0.048), and the %D for 3-nitroaniline (64.2), 2,4-dinitrophenol (43.8), 2,4-dinitrotoluene (26.6), 4-nitroaniline (46.4), and 3,3'-dichlorobenzidine (36.8). Detection limits for 4-nitroaniline and 3,3'-dichlorobenzidine were rejected in Samples S1-23 FB and S6-23, and detection limits for 3-nitroaniline were estimated in these two samples.

#### **IV. Blanks**

No target or tentatively identified compounds were detected in SBLK1, extracted 5/24 and analyzed 6/21.

No target compounds or reportable TIC's were detected in the field blank, S1-23 FB.

#### **V. Surrogate Recovery**

All surrogate recoveries were within established acceptance limits.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample S1-23. All Percent Recovery (%R) and Relative Percent Difference (RPD) values were within established QC criteria except %R for 2,4-dinitrotoluene (actual 115%, limits 24-96%) and pentachlorophenol (actual 107%, limits 9-103%) in the MS and %R for 2,4-dinitrotoluene (97%) in the MSD. Since these recoveries are only slightly high and are consistent, no data are qualified.

A very low level of 3-nitroaniline is reported in both the MS and MSD samples (0.7, 0.5 ug/L, respectively); this compound was not detected in the original sample analysis. Due to the low RF for 3-nitroaniline in the CC standards (0.06, 0.07), these positive values in the MS and MSD runs are rejected as false positives, unless spectra can be provided to confirm their presence.

#### **VII. Field Duplicates**

No field duplicate pair was included with this SDG.

#### VIII. Internal Standards Performance

All internal standard areas and retention times were within the established QC limits for acceptance.

#### IX. TCL Compound Identification

No semivolatile TCL compounds were identified in any of the samples in this SDG.

#### X. Compound Quantitation and Reported Detection Limits

Results and quantitation limits are correctly reported; no dilutions were performed in this SDG.

#### XI. Tentatively Identified Compounds

One TIC was reported in Sample S1-23, identified as tetrachloroethene. This result is rejected because tetrachloroethene is a volatile target compound, and is more accurately reported in the analysis of that fraction. From the COC, it is apparent that this sample was also analyzed for CLP volatiles.

#### XII. System Performance

No system performance problems were observed in the raw data presented in this data package.

#### XIII. Overall Assessment

Sample results are usable as reported with the following exceptions:

1. Results for 4-nitroaniline and 3,3'-dichlorobenzidine are rejected in all samples due to low RF's.

2. Detection limits for 3-nitroaniline are estimated in all samples due to a high %D in both continuing calibrations; detection limits for pyrene are estimated in S1-23 due to a high %D in the first continuing calibration.

Incomplete, unclear, or inaccurate Chain of Custody (COC) records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the COC records included in this data package:

1. More custody records are included than are pertinent to this package; this could cause confusion as to the disposition of the rest of the data requested on the COC's.

2. Transfer signatures are incomplete: the affiliation of the person involved is not included for any of the signatures.

3. Documentation of corrections to the forms is inconsistent—some cross-outs are initialled and dated, and some are not.

4. Cold storage is not documented, except for references to cooler temperatures added to the COC's on 5/21/91.

5. MS/MSD analyses are a laboratory-initiated quality control activity; there should not be separate samples on the COC identified as "MS" and "MSD".

Manually integrated areas should be documented in the data package to allow review of the integration method used.

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

S1-23

Lab Name: PACE Contract: \_\_\_\_\_  
 Lab Code: PACE Case No.: EPC SAS No.: \_\_\_\_\_ SDG No.: 0000019  
 Matrix: (soil/water) WATER Lab Sample ID: 3749.8  
 Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2755  
 Level: (low/med) LOW Date Received: 5/21/91  
 Moisture: not dec.100. dec. 0. Date Extracted: 5/24/91  
 Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/21/91  
 PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:  
 CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

108-95-2-----	Phenol	10.	U
111-44-4-----	bis(2-Chloroethyl) ether	10.	U
95-57-8-----	2-Chlorophenol	10.	U
541-73-1-----	1,3-Dichlorobenzene	10.	U
106-46-7-----	1,4-Dichlorobenzene	10.	U
100-51-6-----	Benzyl alcohol	10.	U
95-50-1-----	1,2-Dichlorobenzene	10.	U
95-48-7-----	2-Methylphenol	10.	U
108-60-1-----	bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----	4-Methylphenol	10.	U
621-64-7-----	N-Nitroso-di-n-propylamine	10.	U
67-72-1-----	Hexachloroethane	10.	U
98-95-3-----	Nitrobenzene	10.	U
78-59-1-----	Isophorone	10.	U
88-75-5-----	2-Nitrophenol	10.	U
105-67-9-----	2,4-Dimethylphenol	10.	U
65-85-0-----	Benzoic acid	50.	U
111-91-1-----	bis(2-Chloroethoxy) methane	10.	U
120-83-2-----	2,4-Dichlorophenol	10.	U
120-82-1-----	1,2,4-Trichlorobenzene	10.	U
91-20-3-----	Naphthalene	10.	U
106-47-8-----	4-Chloroaniline	10.	U
87-68-3-----	Hexachlorobutadiene	10.	U
59-50-7-----	4-Chloro-3-methylphenol	10.	U
91-57-6-----	2-Methylnaphthalene	10.	U
77-47-4-----	Hexachlorocyclopentadiene	10.	U
88-06-2-----	2,4,6-Trichlorophenol	10.	U
95-95-4-----	2,4,5-Trichlorophenol	50.	U
91-58-7-----	2-Chloronaphthalene	10.	U
88-74-4-----	2-Nitroaniline	50.	U
131-11-3-----	Dimethylphthalate	10.	U
208-96-8-----	Acenaphthylene	10.	U
606-20-2-----	2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

S1-23

Lab Name: PACE Contract: SDG No.: 0000020  
 Lab Code: PACE Case No.: EPC SAS No.: Lab Sample ID: 3749.8  
 Matrix: (soil/water) WATER Lab File ID: D2755  
 Sample wt/vol: 1000. (g/mL) ML Date Received: 5/21/91  
 Level: (low/med) LOW Date Extracted: 5/24/91  
 % Moisture: not dec.100. dec. 0. Date Analyzed: 6/21/91  
 Extraction: (SepF/Cont/Sonc) SEPF Dilution Factor: 1.00  
 CPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	Q
99-09-2	3-Nitroaniline	50. U
83-32-9	Acenaphthene	10. U
51-28-5	2,4-Dinitrophenol	50. U
100-02-7	4-Nitrophenol	50. U
132-64-9	Dibenzofuran	10. U
121-14-2	2,4-Dinitrotoluene	10. U
84-66-2	Diethylphthalate	10. U
7005-72-3	4-Chlorophenyl-phenylether	10. U
86-73-7	Fluorene	10. U
100-01-6	4-Nitroaniline	50. U
534-52-1	4,6-Dinitro-2-methylphenol	50. U
86-30-6	N-Nitrosodiphenylamine	10. U
101-55-3	4-Bromophenyl-phenylether	10. U
118-74-1	Hexachlorobenzene	10. U
87-86-5	Pentachlorophenol	50. U
85-01-8	Phenanthrene	10. U
120-12-7	Anthracene	10. U
84-74-2	Di-n-butylphthalate	10. U
206-44-0	Fluoranthene	10. U
129-00-0	Pyrene	10. U
85-68-7	Butylbenzylphthalate	10. U
91-94-1	3,3'-Dichlorobenzidine	20. U
56-55-3	Benzo(a)anthracene	10. U
218-01-9	Chrysene	10. U
117-81-7	bis(2-Ethylhexyl)phthalate	10. U
117-84-0	Di-n-octylphthalate	10. U
205-99-2	Benzo(b)fluoranthene	10. U
207-08-9	Benzo(k)fluoranthene	10. U
50-32-8	Benzo(a)pyrene	10. U
193-39-5	Indeno(1,2,3-cd)pyrene	10. U
53-70-3	Dibenzo(a,h)anthracene	10. U
191-24-2	Benzo(g,h,i)perylene	10. U

ca Erikson 7/7/91

(1) - Cannot be separated from diphenylamine

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

FPA SAMPLE NO.

S1-23

Lab Name: PACE

Contract: 0000021

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3749.8

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2755

Level: (low/med) LOW

Date Received: 5/21/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found: 1

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	D.V. Qualifier	RT	EST. CONC.	Q
1. 127-18-4	ETHENE, TETRACHLORO	R	6.54	300.	J
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO.

S1-23 FB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

0000027

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3750.1

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2769

Level: (low/med) LOW

Date Received: 5/21/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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108-95-2-----	Phenol	10.	U
111-44-4-----	bis(2-Chloroethyl) ether	10.	U
95-57-8-----	2-Chlorophenol	10.	U
541-73-1-----	1,3-Dichlorobenzene	10.	U
106-46-7-----	1,4-Dichlorobenzene	10.	U
100-51-6-----	Benzyl alcohol	10.	U
95-50-1-----	1,2-Dichlorobenzene	10.	U
95-48-7-----	2-Methylphenol	10.	U
108-60-1-----	bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----	4-Methylphenol	10.	U
621-64-7-----	N-Nitroso-di-n-propylamine	10.	U
67-72-1-----	Hexachloroethane	10.	U
98-95-3-----	Nitrobenzene	10.	U
78-59-1-----	Isophorone	10.	U
88-75-5-----	2-Nitrophenol	10.	U
105-67-9-----	2,4-Dimethylphenol	10.	U
65-85-0-----	Benzoic acid	50.	U
111-91-1-----	bis(2-Chloroethoxy) methane	10.	U
120-83-2-----	2,4-Dichlorophenol	10.	U
120-82-1-----	1,2,4-Trichlorobenzene	10.	U
91-20-3-----	Naphthalene	10.	U
106-47-8-----	4-Chloroaniline	10.	U
87-68-3-----	Hexachlorobutadiene	10.	U
59-50-7-----	4-Chloro-3-methylphenol	10.	U
91-57-6-----	2-Methylnaphthalene	10.	U
77-47-4-----	Hexachlorocyclopentadiene	10.	U
88-06-2-----	2,4,6-Trichlorophenol	10.	U
95-95-4-----	2,4,5-Trichlorophenol	50.	U
91-58-7-----	2-Chloronaphthalene	10.	U
88-74-4-----	2-Nitroaniline	50.	U
131-11-3-----	Dimethylphthalate	10.	U
208-96-8-----	Acenaphthylene	10.	U
606-20-2-----	2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

S1-23 FB

Lab Name: PACE Contract:   
 Lab Code: PACE Case No.: EPC SAS No.: 0000028 SDG No.:   
 Matrix: (soil/water) WATER Lab Sample ID: 3750.1   
 Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2769   
 Level: (low/med) LOW Date Received: 5/21/91   
 % Moisture: not dec.100. dec. 0. Date Extracted: 5/24/91   
 Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/21/91   
 CPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L Q

99-09-2-----	3-Nitroaniline	50.	U	UJ
83-32-9-----	Acenaphthene	10.	U	
51-28-5-----	2,4-Dinitrophenol	50.	U	
100-02-7-----	4-Nitrophenol	50.	U	
132-64-9-----	Dibenzofuran	10.	U	
121-14-2-----	2,4-Dinitrotoluene	10.	U	
84-66-2-----	Diethylphthalate	10.	U	
7005-72-3-----	4-Chlorophenyl-phenylether	10.	U	
86-73-7-----	Fluorene	10.	U	
100-01-6-----	4-Nitroaniline	50.	U	R
534-52-1-----	4,6-Dinitro-2-methylphenol	50.	U	
86-30-6-----	N-Nitrosodiphenylamine	10.	U	
101-55-3-----	4-Bromophenyl-phenylether	10.	U	
118-74-1-----	Hexachlorobenzene	10.	U	
87-86-5-----	Pentachlorophenol	50.	U	
85-01-8-----	Phenanthrene	10.	U	
120-12-7-----	Anthracene	10.	U	
84-74-2-----	Di-n-butylphthalate	10.	U	
206-44-0-----	Fluoranthene	10.	U	
129-00-0-----	Pyrene	10.	U	
85-68-7-----	Butylbenzylphthalate	10.	U	
91-94-1-----	3,3'-Dichlorobenzidine	20.	U	R
56-55-3-----	Benzo(a)anthracene	10.	U	
218-01-9-----	Chrysene	10.	U	
117-81-7-----	bis(2-Ethylhexyl)phthalate	10.	U	
117-84-0-----	Di-n-octylphthalate	10.	U	
205-99-2-----	Benzo(b)fluoranthene	10.	U	
207-08-9-----	Benzo(k)fluoranthene	10.	U	
50-32-8-----	Benzo(a)pyrene	10.	U	
193-39-5-----	Indeno(1,2,3-cd)pyrene	10.	U	
53-70-3-----	Dibenzo(a,h)anthracene	10.	U	
191-24-2-----	Benzo(g,h,i)perylene	10.	U	

C. Erikson 7/2/91

(1) - Cannot be separated from diphenylamine



1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-23 FB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.: 0000029SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3750.1

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2769

Level: (low/med) LOW

Date Received: 5/21/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

GC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

( ) A SAMPLE NO.

S6-23

Lab Name: PACE	Contract:	0000033
Lab Code: PACE	Case No.: EPC	SAS No.: SDG No.:
Matrix: (soil/water) WATER	Lab Sample ID: 3751.0	
Sample wt/vol: 1000. (g/mL) ML	Lab File ID: D2768	
Level: (low/med) LOW	Date Received: 5/21/91	
% Moisture: not dec.100. dec. 0.	Date Extracted: 5/24/91	
Extraction: (SepF/Cont/Sonc) SEPF	Date Analyzed: 6/21/91	
PC Cleanup: (Y/N) N	pH: 7.0	Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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108-95-2-----Phenol	10.	U
111-44-4-----bis(2-Chloroethyl) ether	10.	U
95-57-8-----2-Chlorophenol	10.	U
541-73-1-----1,3-Dichlorobenzene	10.	U
106-46-7-----1,4-Dichlorobenzene	10.	U
100-51-6-----Benzyl alcohol	10.	U
95-50-1-----1,2-Dichlorobenzene	10.	U
95-48-7-----2-Methylphenol	10.	U
108-60-1-----bis(2-Chloroisopropyl) ether	10.	U
106-44-5-----4-Methylphenol	10.	U
621-64-7-----N-Nitroso-di-n-propylamine	10.	U
67-72-1-----Hexachloroethane	10.	U
98-95-3-----Nitrobenzene	10.	U
78-59-1-----Isophorone	10.	U
88-75-5-----2-Nitrophenol	10.	U
105-67-9-----2,4-Dimethylphenol	10.	U
65-85-0-----Benzoic acid	50.	U
111-91-1-----bis(2-Chloroethoxy) methane	10.	U
120-83-2-----2,4-Dichlorophenol	10.	U
120-82-1-----1,2,4-Trichlorobenzene	10.	U
91-20-3-----Naphthalene	10.	U
106-47-8-----4-Chloroaniline	10.	U
87-68-3-----Hexachlorobutadiene	10.	U
59-50-7-----4-Chloro-3-methylphenol	10.	U
91-57-6-----2-Methylnaphthalene	10.	U
77-47-4-----Hexachlorocyclopentadiene	10.	U
88-06-2-----2,4,6-Trichlorophenol	10.	U
95-95-4-----2,4,5-Trichlorophenol	50.	U
91-58-7-----2-Chloronaphthalene	10.	U
88-74-4-----2-Nitroaniline	50.	U
131-11-3-----Dimethylphthalate	10.	U
208-96-8-----Acenaphthylene	10.	U
606-20-2-----2,6-Dinitrotoluene	10.	U

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

S6-23

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.: 0000034 SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3751.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2768

Level: (low/med) LOW

Date Received: 5/21/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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99-09-2-----3-Nitroaniline	50.	U	WJ
83-32-9-----Acenaphthene	10.	U	
51-28-5-----2,4-Dinitrophenol	50.	U	
100-02-7-----4-Nitrophenol	50.	U	
132-64-9-----Dibenzofuran	10.	U	
121-14-2-----2,4-Dinitrotoluene	10.	U	
84-66-2-----Diethylphthalate	10.	U	
7005-72-3-----4-Chlorophenyl-phenylether	10.	U	
86-73-7-----Fluorene	10.	U	
100-01-6-----4-Nitroaniline	50.	U	R
534-52-1-----4,6-Dinitro-2-methylphenol	50.	U	
86-30-6-----N-Nitrosodiphenylamine	10.	U	
101-55-3-----4-Bromophenyl-phenylether	10.	U	
118-74-1-----Hexachlorobenzene	10.	U	
87-86-5-----Pentachlorophenol	50.	U	
85-01-8-----Phenanthrene	10.	U	
120-12-7-----Anthracene	10.	U	
84-74-2-----Di-n-butylphthalate	10.	U	
206-44-0-----Fluoranthene	10.	U	
129-00-0-----Pyrene	10.	U	
85-68-7-----Butylbenzylphthalate	10.	U	
91-94-1-----3,3'-Dichlorobenzidine	20.	U	R
56-55-3-----Benzo(a)anthracene	10.	U	
218-01-9-----Chrysene	10.	U	
117-81-7-----bis(2-Ethylhexyl)phthalate	10.	U	
117-84-0-----Di-n-octylphthalate	10.	U	
205-99-2-----Benzo(b)fluoranthene	10.	U	
207-08-9-----Benzo(k)fluoranthene	10.	U	
50-32-8-----Benzo(a)pyrene	10.	U	
193-39-5-----Indeno(1,2,3-cd)pyrene	10.	U	
53-70-3-----Dibenzo(a,h)anthracene	10.	U	
191-24-2-----Benzo(g,h,i)perylene	10.	U	

Coulson 7/9/91

(1) - Cannot be separated from diphenylamine

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
RELATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S6-23

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.: 000003 SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3751.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2768

Level: (low/med) LOW

Date Received: 5/21/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
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7.				
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30.				



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

PESTICIDES/PCBS ANALYSES DATA

Samples Collected 05/20/91

Chemical Analyses Performed By

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233

## EXECUTIVE SUMMARY

No target compound list (TCL) compounds were detected in the pesticide/PCB fraction.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

Data Validation for  
Environmental Project Control, Inc.

Samples Collected May 20, 1991

Pesticide/PCB Analyses Data

Case Narrative

Three treatment system samples were collected May 20, 1991 and submitted to Pace, Inc. May 21, 1991. The laboratory was requested to perform pesticide/PCB target compound list (TCL) analyses.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  range may adversely affect the more volatile compounds.

No TCL compounds were detected in the pesticide/PCB fraction.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3749	S1-23	05/20/91
3750	S1-23FB	05/20/91
3751	S6-23	05/20/91

The areas reviewed during validation are listed below.

## ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment of Data for a Case



## DATA VALIDATION

### I. Sample Holding Times

All samples were extracted and analyzed within holding times.

### II. Instrument Performance

DDT retention time was greater than or equal to 12 minutes.

Retention time windows were reported on Form IX for each column used.

Retention times and calibration factors were accurately recorded on Form IX.

DDT/Endrin degradation was less than 20%.

DBC retention time met the 1.5% criteria for wide-bore capillary columns on the DB-5 and DB-608 columns.

### III. Calibration

#### Initial Calibration Linearity Check Inst V63400 06/03-05/91

The DB608 column used for quantitation met the 10% relative standard deviation (%RSD) criteria. The DB5 column used for confirmation failed to meet the %RSD criteria for the following compounds:

aldrin (19%)  
endrin (26%)  
4,4'-DDT (15%)

These compound were not detected and no data have been qualified.

#### Initial Calibration Linearity Check Inst V63400 06/10-11/91

The DB608 column used for quantitation met the 10% relative standard deviation (%RSD) criteria. The DB5 column used for confirmation failed to meet the %RSD criteria for the following compounds:

aldrin (26%)  
endrin (28%)  
4,4'-DDT (31%)  
DBC (21%)

These compound were not detected and no data have been qualified.

#### Analytical Run Sequence

All standards were run within 72 hours.

#### Continuing Calibration

The column used for quantitation met the 15% D criteria.

The column used for confirmation met the 20% D criteria.

#### **IV. Blanks**

No TCL compounds were detected in BLKW22.

#### **V. Surrogate Recovery**

Surrogate recoveries were acceptable.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

Matrix spike recoveries for the following compounds were outside the established advisory limits:

gamma-BHC (13%)  
endrin (8%)

Matrix spike duplicate recoveries for the following compounds were outside established advisory limits:

gamma-BHC (4%)  
heptachlor (0%)  
dieldrin (0%)  
endrin (0%)  
4,4'-DDT (19%)

These compounds were not detected in the unspiked sample but the non detects for heptachlor, dieldrin, and endrin have been rejected.

Gamma-BHC, heptachlor, aldrin, dieldrin, endrin and 4,4'-DDT failed to meet RPD criteria. These compounds were not detected in the unspiked sample. The non-detects for heptachlor, dieldrin, and endrin were previously rejected. No other data have been qualified.

**VII. Field Quality Control Samples**

S1-23FB is a field blank. No TCL compounds were detected.

**VIII. Internal Standards Performance**

Standard performance based on the retention time windows was acceptable.

**IX. TCL Compound Identification**

No target compounds were detected.

**X. Compound Quantitation and Reported Detection Limits**

Detection limit quantitations were acceptable with regard to supporting data.

**XI. Tentatively Identified Compounds**

Not Applicable.

**XII. System Performance**

System performance was acceptable.

**XIII. Overall Assessment of Data for a Case**

No TCL compounds were detected.

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

SA SAMPLE NO.

S1-23

00020

Lab Name: PACE

Contract: EPC

Lab Code: PACE

Case No.:

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3749.8

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66625

Level: (low/med) LOW

Date Received: 5/21/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/22/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/ 5/91

IPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	<del>.050</del>	<del>U</del> R
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	<del>.10</del>	<del>U</del> R
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	<del>.10</del>	<del>U</del> R
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

1A SAMPLE NO.

Lab Name: PACE

Contract: EPC

S1-23FB

00026

Lab Code: PACE

Case No.:

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3750.1

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66665

Level: (low/med) LOW

Date Received: 5/21/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/22/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/10/91

PC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

319-84-6-----Alpha-BHC	.050	U
319-85-7-----Beta-BHC	.050	U
319-86-8-----Delta-BHC	.050	U
58-89-9-----Gamma-BHC	.050	U
76-44-8-----Heptachlor	.050	U
309-00-2-----Aldrin	.050	U
1024-57-3-----Heptachlor Epoxide	.050	U
959-98-8-----Endosulfan I	.050	U
60-57-1-----Dieldrin	.10	U
72-55-9-----4,4'-DDE	.10	U
72-20-8-----Endrin	.10	U
33213-65-9-----Endosulfan II	.10	U
72-54-8-----4,4'-DDD	.10	U
1031-07-8-----Endosulfan Sulfate	.10	U
50-29-3-----4,4'-DDT	.10	U
72-43-5-----Methoxychlor	.50	U
53494-70-5-----Endrin Ketone	.10	U
5103-71-9-----alpha-Chlordane	.50	U
5103-74-2-----gamma-Chlordane	.50	U
8001-35-2-----Toxaphene	1.0	U
12674-11-2-----Arochlor-1016	.50	U
11104-28-2-----Arochlor-1221	.50	U
11141-16-5-----Arochlor-1232	.50	U
53469-21-9-----Arochlor-1242	.50	U
12672-29-6-----Arochlor-1248	.50	U
11097-69-1-----Arochlor-1254	1.0	U
11096-82-5-----Arochlor-1260	1.0	U

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

S6-23

Lab Name: PACE

Contract: EPC

Lab Code: PACE

Case No.:

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3751.0

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: V66666

Level: (low/med) LOW

Date Received: 5/21/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/22/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/10/91

PC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

319-84-6-----	Alpha-BHC	.050	U
319-85-7-----	Beta-BHC	.050	U
319-86-8-----	Delta-BHC	.050	U
58-89-9-----	Gamma-BHC	.050	U
76-44-8-----	Heptachlor	.050	U
309-00-2-----	Aldrin	.050	U
1024-57-3-----	Heptachlor Epoxide	.050	U
959-98-8-----	Endosulfan I	.050	U
60-57-1-----	Dieldrin	.10	U
72-55-9-----	4,4'-DDE	.10	U
72-20-8-----	Endrin	.10	U
33213-65-9-----	Endosulfan II	.10	U
72-54-8-----	4,4'-DDD	.10	U
1031-07-8-----	Endosulfan Sulfate	.10	U
50-29-3-----	4,4'-DDT	.10	U
72-43-5-----	Methoxychlor	.50	U
53494-70-5-----	Endrin Ketone	.10	U
5103-71-9-----	alpha-Chlordane	.50	U
5103-74-2-----	gamma-Chlordane	.50	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Arochlor-1016	.50	U
11104-28-2-----	Arochlor-1221	.50	U
11141-16-5-----	Arochlor-1232	.50	U
53469-21-9-----	Arochlor-1242	.50	U
12672-29-6-----	Arochlor-1248	.50	U
11097-69-1-----	Arochlor-1254	1.0	U
11096-82-5-----	Arochlor-1260	1.0	U



DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.  
  
WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/21/91

Chemical Analyses Performed By  
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233



## EXECUTIVE SUMMARY

Tetrachloroethene was the only compound detected above the detection limits in the samples. No tentatively identified compounds (TICs) were detected.

As noted on the chain of custody, samples were 12° C when received in the laboratory. Temperatures outside the 4° C  $\pm$  2° C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.





### Case Narrative

Six treatment system samples were collected and submitted for analysis to PACE, Inc. on May 21, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses. No field duplicate, matrix or matrix spike duplicate were analyzed.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
T1INF	3791	05/21/91
T2INF	3800	05/21/91
T3INF	3805	05/21/91
T4INF	3810	05/21/91

### **Volatiles**

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment

### **I. Holding Times**

All samples were analyzed within the 14-day holding time for preserved samples.

### **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

### **III. Calibration**

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data were affected.

#### **A. Initial**

Initial calibration criteria were met.

#### **B. Continuing**

Continuing calibration criteria not met are summarized below.

Date	Time	Compound	%D
6/2	10:23	2-Butanone	36.0 (25)
		4-Methyl-2-pentanone	33.1 (25)
		2-Hexanone	30.1 (25)
		1,1,2,2-Tetrachloroethane	32.9 (25)

( ) Acceptance criteria

The data were not affected.

### **IV. Blanks**

All blanks were acceptable with the exception of VBLK01 which had acetone detected at 2 ppb. Acetone results were qualified as less than the reported values (U).



#### **V. Surrogate Recovery**

All surrogate recoveries were within acceptance criteria.

#### **VI. Matrix Spike/Matrix Spike Duplicate**

No matrix spike/matrix spike duplicate analysis was performed. Since the surrogate recoveries and the internal standard area counts were acceptable, the data can be used with caution.

#### **VII. Field Duplicates**

Field duplicate samples were not collected. Since the surrogate recoveries and the internal standard area counts were acceptable, the data can be used with caution.

#### **VIII. Internal Standards Performance**

Internal standards areas and retention times were acceptable.

#### **IX. TCL Compound Identification**

Target compounds were properly identified.

#### **X. Compound Quantitation and Reported Detection Limits**

Concentrations could not be duplicated by manual calculation using the appropriate continuing calibration standard. (Manually calculated results were approximately 3% higher than those provide on the instrument printout.) Because of the dilution factors required for analysis, the data were not affected by the differences in calculated results.

#### **XI. Tentatively Identified Compounds**

No TICs were detected.

#### **XII. System Performance**

System performance was acceptable.



### **XIII. Overall Assessment of Data for a Case**

Since no field QC samples were provided, data should be used with caution.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

T1-00021

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3791.9

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2778

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	UG/L
74-87-3	Chloromethane	200.	U
74-83-9	Bromomethane	200.	U
75-01-4	Vinyl Chloride	200.	U
75-00-3	Chloroethane	200.	U
75-09-2	Methylene Chloride	100.	U
67-64-1	Acetone	200.	U
75-15-0	Carbon Disulfide	100.	U
75-35-4	1,1-Dichloroethene	100.	U
75-34-3	1,1-Dichloroethane	100.	U
540-59-0	1,2-Dichloroethene (total)	100.	U
67-66-3	Chloroform	100.	U
107-06-2	1,2-Dichloroethane	100.	U
78-93-3	2-Butanone	200.	U
71-55-6	1,1,1-Trichloroethane	100.	U
56-23-5	Carbon Tetrachloride	100.	U
108-05-4	Vinyl Acetate	200.	U
75-27-4	Bromodichloromethane	100.	U
78-87-5	1,2-Dichloropropane	100.	U
10061-01-5	cis-1,3-Dichloropropene	100.	U
79-01-6	Trichloroethene	43.	J
124-48-1	Dibromochloromethane	100.	U
79-00-5	1,1,2-Trichloroethane	100.	U
71-43-2	Benzene	100.	U
10061-02-6	Trans-1,3-Dichloropropene	100.	U
75-25-2	Bromoform	100.	U
108-10-1	4-Methyl-2-Pentanone	200.	U
591-78-6	2-Hexanone	200.	U
127-18-4	Tetrachloroethene	1800.	U
79-34-5	1,1,2,2-Tetrachloroethane	100.	U
108-88-3	Toluene	100.	U
108-90-7	Chlorobenzene	100.	U
100-41-4	Ethylbenzene	100.	U
100-42-5	Styrene	100.	U
1330-20-7	Xylene (total)	100.	U

one  
6/27/91

VOLEATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

T1-INF

00022

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3791.9

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2778

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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1A  
VOI TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

60028

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3800.1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2779

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	200.	U
74-83-9	-----Bromomethane	200.	U
75-01-4	-----Vinyl Chloride	200.	U
75-00-3	-----Chloroethane	200.	U
75-09-2	-----Methylene Chloride	100.	U
67-64-1	-----Acetone	200.	U
75-15-0	-----Carbon Disulfide	100.	U
75-35-4	-----1,1-Dichloroethene	100.	U
75-34-3	-----1,1-Dichloroethane	100.	U
540-59-0	-----1,2-Dichloroethene (total)	100.	U
67-66-3	-----Chloroform	100.	U
107-06-2	-----1,2-Dichloroethane	100.	U
78-93-3	-----2-Butanone	200.	U
71-55-6	-----1,1,1-Trichloroethane	100.	U
56-23-5	-----Carbon Tetrachloride	100.	U
108-05-4	-----Vinyl Acetate	200.	U
75-27-4	-----Bromodichloromethane	100.	U
78-87-5	-----1,2-Dichloropropane	100.	U
10061-01-5	-----cis-1,3-Dichloropropene	100.	U
79-01-6	-----Trichloroethene	51.	J
124-48-1	-----Dibromochloromethane	100.	U
79-00-5	-----1,1,2-Trichloroethane	100.	U
71-43-2	-----Benzene	100.	U
10061-02-6	-----Trans-1,3-Dichloropropene	100.	U
75-25-2	-----Bromoform	100.	U
108-10-1	-----4-Methyl-2-Pentanone	200.	U
591-78-6	-----2-Hexanone	200.	U
127-18-4	-----Tetrachloroethene	1800.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	100.	U
108-88-3	-----Toluene	100.	U
108-90-7	-----Chlorobenzene	100.	U
100-41-4	-----Ethylbenzene	100.	U
100-42-5	-----Styrene	100.	U
1330-20-7	-----Xylene (total)	100.	U

see 6127191



VOLEATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

T2-INF

00029

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3800.1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2779

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

Volume: (pack/cap) PACK

Dilution Factor: 20.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

T3-INF

00035

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3805.2

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2780

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	200.	U
74-83-9	-----Bromomethane	200.	U
75-01-4	-----Vinyl Chloride	200.	U
75-00-3	-----Chloroethane	200.	U
75-09-2	-----Methylene Chloride	100.	U
67-64-1	-----Acetone	200.	U
75-15-0	-----Carbon Disulfide	100.	U
75-35-4	-----1,1-Dichloroethene	100.	U
75-34-3	-----1,1-Dichloroethane	100.	U
540-59-0	-----1,2-Dichloroethene (total)	100.	U
67-66-3	-----Chloroform	100.	U
107-06-2	-----1,2-Dichloroethane	100.	U
78-93-3	-----2-Butanone	200.	U
71-55-6	-----1,1,1-Trichloroethane	100.	U
56-23-5	-----Carbon Tetrachloride	100.	U
108-05-4	-----Vinyl Acetate	200.	U
75-27-4	-----Bromodichloromethane	100.	U
78-87-5	-----1,2-Dichloropropane	100.	U
10061-01-5	-----cis-1,3-Dichloropropene	100.	U
79-01-6	-----Trichloroethene	47.	J
124-48-1	-----Dibromochloromethane	100.	U
79-00-5	-----1,1,2-Trichloroethane	100.	U
71-43-2	-----Benzene	100.	U
10061-02-6	-----Trans-1,3-Dichloropropene	100.	U
75-25-2	-----Bromoform	100.	U
108-10-1	-----4-Methyl-2-Pentanone	200.	U
591-78-6	-----2-Hexanone	200.	U
127-18-4	-----Tetrachloroethene	1900.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	100.	U
108-88-3	-----Toluene	100.	U
108-90-7	-----Chlorobenzene	100.	U
100-41-4	-----Ethylbenzene	100.	U
100-42-5	-----Styrene	100.	U
1330-20-7	-----Xylene (total)	100.	U

6127191

VOA-TIC ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

T3-INF

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00036

Matrix: (soil/water) WATER

Lab Sample ID: 3805.2

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2780

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

T4-INF

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

00042

Matrix: (soil/water) WATER

Lab Sample ID: 3810.9

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2838

Level: (low/med) LOW

Date Received: 5/22/91

Moisture: not dec. 100.

Date Analyzed: 6/ 2/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	200.	U
74-83-9	-----Bromomethane	200.	U
75-01-4	-----Vinyl Chloride	200.	U
75-00-3	-----Chloroethane	200.	U
75-09-2	-----Methylene Chloride	100.	U
67-64-1	-----Acetone	250.	U
75-15-0	-----Carbon Disulfide	100.	U
75-35-4	-----1,1-Dichloroethene	100.	U
75-34-3	-----1,1-Dichloroethane	100.	U
540-59-0	-----1,2-Dichloroethene (total)	100.	U
67-66-3	-----Chloroform	100.	U
107-06-2	-----1,2-Dichloroethane	100.	U
78-93-3	-----2-Butanone	200.	U
71-55-6	-----1,1,1-Trichloroethane	100.	U
56-23-5	-----Carbon Tetrachloride	100.	U
108-05-4	-----Vinyl Acetate	200.	U
75-27-4	-----Bromodichloromethane	100.	U
78-87-5	-----1,2-Dichloropropane	100.	U
10061-01-5	-----cis-1,3-Dichloropropene	100.	U
79-01-6	-----Trichloroethene	100.	U
124-48-1	-----Dibromochloromethane	100.	U
79-00-5	-----1,1,2-Trichloroethane	100.	U
71-43-2	-----Benzene	100.	U
10061-02-6	-----Trans-1,3-Dichloropropene	100.	U
75-25-2	-----Bromoform	100.	U
108-10-1	-----4-Methyl-2-Pentanone	200.	U
591-78-6	-----2-Hexanone	200.	U
127-18-4	-----Tetrachloroethene	1400.	
79-34-5	-----1,1,2,2-Tetrachloroethane	100.	U
108-88-3	-----Toluene	100.	U
108-90-7	-----Chlorobenzene	100.	U
100-41-4	-----Ethylbenzene	100.	U
100-42-5	-----Styrene	100.	U
1330-20-7	-----Xylene (total)	100.	U

VOA SERVICE ORGANIZED ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

T4-INF

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 38100043

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2838

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 6/ 2/91

Column: (pack/can) PACK

Dilution Factor: 20.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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DATA VALIDATION REPORT  
FOR  
ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT  
TREATMENT SYSTEM SAMPLING  
VOLATILES ANALYSES DATA

Samples Collected 5/21/91

Chemical Analyses Performed By  
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.  
7A Grace's Drive  
Coatesville, PA 19320  
(215) 383-7233



## EXECUTIVE SUMMARY

Data quality for this sample delivery group was very good.

Cooler temperature upon receipt of samples by the laboratory was 12°C. Cooler temperatures outside the 4°C  $\pm$  2°C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable (Note: analyte may or may not be present).
- UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



### Case Narrative

Eight samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 21, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

<u>Client ID</u>	<u>Lab ID</u>	<u>Date of Collection</u>
S1-24	3779	05/21/91
S1-24DUP	3780	05/21/91
S1-24TB	3781	05/21/91
S2-22	3784	05/21/91
S3-22	3785	05/21/91
S4-22	3786	05/21/91





## **Volatiles**

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
- IX. TCL Compound Identification
- X. Compound Quantitation and Reported Detection Limits
- XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



## **I. Holding Times**

All samples were received preserved and analyzed within the 14-day holding time for preserved samples.

## **II. GC/MS Tuning**

GC/MS tuning and mass calibrations were within criteria.

## **III. Calibration**

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### **A. Initial**

Initial calibration criteria were met on 5/28/91.

### **B. Continuing**

Continuing calibration criteria were met on 5/29/91 (12:42).

Continuing calibration criteria were met on 5/29/91 (23:20) with the exception of the % difference for 4-methyl-2-pentanone (actual 25.6; criteria 25) and 2-hexanone (actual 25.8; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/30/91 (10:23) with the exception of the % difference for 2-butanone (actual 28.3; criteria 25), 4-methyl-2-pentanone (actual 35.5; criteria 25), 2-hexanone (actual 35.7; criteria 25), and 1,1,2,2-tetrachloroethane (actual 27.1; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/30/91 (23:11).

Continuing calibration criteria were met on 5/31/91.

## **IV. Blanks**

Acetone was reported in Method Blanks VBLK01, VBLK02, and S1-24TB. Methylene chloride was reported in Method Blank VBLK01. The result for acetone in Sample S1-24TB was qualified as less than the reported value.

#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S1-24. The percent recoveries for 1,1-dichloroethene in the MS and the MSD were below QC criteria. No positive results for 1,1-dichloroethene were reported in field samples; data were not affected.

#### VII. Field Duplicates

Compounds and concentrations (in ug/L) reported in Samples S1-24 and S1-24DUP were as follows:

<u>Compound</u>	<u>S1-24</u>	<u>S1-24DUP</u>
Trichloroethene	80	74
Tetrachloroethene	3400	3200

Results were within QC criteria.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The tetrachloroethene result in Sample S2-22 was slightly beyond the calibration range of the instrument. This result met precision and accuracy criteria and was acceptable as reported.

The concentrations reported on the quant report for Sample S3-22 were apparently calculated using the wrong calibration standard. Results reported on the Form I are correct.

All other results and detection limits were acceptable with regard to the supporting data.



**XI. Tentatively Identified Compounds**

No TICs were reported for this SDG.

**XII. System Performance**

System performance requires attention. Manual integrations should be addressed. Quantified results should be verified for accuracy.

**XIII. Overall Assessment of Data for a Case**

Data quality for this sample delivery group was very good.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-24

Lab Name: PACE

Contract:

00026

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3779.0

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2765

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	200.	U
74-83-9	-----Bromomethane	200.	U
75-01-4	-----Vinyl Chloride	200.	U
75-00-3	-----Chloroethane	200.	U
75-09-2	-----Methylene Chloride	100.	U
67-64-1	-----Acetone	200.	U
75-15-0	-----Carbon Disulfide	100.	U
75-35-4	-----1,1-Dichloroethene	100.	U
75-34-3	-----1,1-Dichloroethane	100.	U
540-59-0	-----1,2-Dichloroethene (total)	100.	U
67-66-3	-----Chloroform	100.	U
107-06-2	-----1,2-Dichloroethane	100.	U
78-93-3	-----2-Butanone	200.	U
71-55-6	-----1,1,1-Trichloroethane	100.	U
56-23-5	-----Carbon Tetrachloride	100.	U
108-05-4	-----Vinyl Acetate	200.	U
75-27-4	-----Bromodichloromethane	100.	U
78-87-5	-----1,2-Dichloropropane	100.	U
10061-01-5	-----cis-1,3-Dichloropropene	100.	U
79-01-6	-----Trichloroethene	80.	J
124-48-1	-----Dibromochloromethane	100.	U
79-00-5	-----1,1,2-Trichloroethane	100.	U
71-43-2	-----Benzene	100.	U
10061-02-6	-----Trans-1,3-Dichloropropene	100.	U
75-25-2	-----Bromoform	100.	U
108-10-1	-----4-Methyl-2-Pentanone	200.	U
591-78-6	-----2-Hexanone	200.	U
127-18-4	-----Tetrachloroethene	3400.	
79-34-5	-----1,1,2,2-Tetrachloroethane	100.	U
108-88-3	-----Toluene	100.	U
108-90-7	-----Chlorobenzene	100.	U
100-41-4	-----Ethylbenzene	100.	U
100-42-5	-----Styrene	100.	U
1330-20-7	-----Xylene (total)	100.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-24

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

000507 No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3779.0

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2765

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-24DUP

Lab Name: PACE

Contract:

00033

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3780.3

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2805

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/31/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	200.	U
74-83-9	-----Bromomethane	200.	U
75-01-4	-----Vinyl Chloride	200.	U
75-00-3	-----Chloroethane	200.	U
75-09-2	-----Methylene Chloride	100.	U
67-64-1	-----Acetone	200.	U
75-15-0	-----Carbon Disulfide	100.	U
75-35-4	-----1,1-Dichloroethene	100.	U
75-34-3	-----1,1-Dichloroethane	100.	U
540-59-0	-----1,2-Dichloroethene (total)	100.	U
67-66-3	-----Chloroform	100.	U
107-06-2	-----1,2-Dichloroethane	100.	U
78-93-3	-----2-Butanone	200.	U
71-55-6	-----1,1,1-Trichloroethane	100.	U
56-23-5	-----Carbon Tetrachloride	100.	U
108-05-4	-----Vinyl Acetate	200.	U
75-27-4	-----Bromodichloromethane	100.	U
78-87-5	-----1,2-Dichloropropane	100.	U
10061-01-5	-----cis-1,3-Dichloropropene	100.	U
79-01-6	-----Trichloroethene	74.	J
124-48-1	-----Dibromochloromethane	100.	U
79-00-5	-----1,1,2-Trichloroethane	100.	U
71-43-2	-----Benzene	100.	U
10061-02-6	-----Trans-1,3-Dichloropropene	100.	U
75-25-2	-----Bromoform	100.	U
108-10-1	-----4-Methyl-2-Pentanone	200.	U
591-78-6	-----2-Hexanone	200.	U
127-18-4	-----Tetrachloroethene	3200.	
79-34-5	-----1,1,2,2-Tetrachloroethane	100.	U
108-88-3	-----Toluene	100.	U
108-90-7	-----Chlorobenzene	100.	U
100-41-4	-----Ethylbenzene	100.	U
100-42-5	-----Styrene	100.	U
1330-20-7	-----Xylene (total)	100.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-24DUP

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

00654 No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3780.3

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2805

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/31/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-24TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3781.1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2786

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:  
(ug/L or ug/kg) UG/L

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	10.	U
74-83-9	-----Bromomethane	10.	U
75-01-4	-----Vinyl Chloride	10.	U
75-00-3	-----Chloroethane	10.	U
75-09-2	-----Methylene Chloride	5.	U
67-64-1	-----Acetone	14.	U
75-15-0	-----Carbon Disulfide	5.	U
75-35-4	-----1,1-Dichloroethene	5.	U
75-34-3	-----1,1-Dichloroethane	5.	U
540-59-0	-----1,2-Dichloroethene (total)	5.	U
67-66-3	-----Chloroform	5.	U
107-06-2	-----1,2-Dichloroethane	5.	U
78-93-3	-----2-Butanone	10.	U
71-55-6	-----1,1,1-Trichloroethane	5.	U
56-23-5	-----Carbon Tetrachloride	5.	U
108-05-4	-----Vinyl Acetate	10.	U
75-27-4	-----Bromodichloromethane	5.	U
78-87-5	-----1,2-Dichloropropane	5.	U
10061-01-5	-----cis-1,3-Dichloropropene	5.	U
79-01-6	-----Trichloroethene	5.	U
124-48-1	-----Dibromochloromethane	5.	U
79-00-5	-----1,1,2-Trichloroethane	5.	U
71-43-2	-----Benzene	5.	U
10061-02-6	-----Trans-1,3-Dichloropropene	5.	U
75-25-2	-----Bromoform	5.	U
108-10-1	-----4-Methyl-2-Pentanone	10.	U
591-78-6	-----2-Hexanone	10.	U
127-18-4	-----Tetrachloroethene	5.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5.	U
108-88-3	-----Toluene	5.	U
108-90-7	-----Chlorobenzene	5.	U
100-41-4	-----Ethylbenzene	5.	U
100-42-5	-----Styrene	5.	U
1330-20-7	-----Xylene (total)	5.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S1-24TB

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00001

Matrix: (soil/water) WATER

Lab Sample ID: 3781.1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2786

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S2-22

Lab Name: PACE

Contract: 00046

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3784.6

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2776

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	25.	U
74-83-9	-----Bromomethane	25.	U
75-01-4	-----Vinyl Chloride	25.	U
75-00-3	-----Chloroethane	25.	U
75-09-2	-----Methylene Chloride	12.	U
67-64-1	-----Acetone	25.	U
75-15-0	-----Carbon Disulfide	12.	U
75-35-4	-----1,1-Dichloroethene	12.	U
75-34-3	-----1,1-Dichloroethane	6.	J
540-59-0	-----1,2-Dichloroethene (total)	17.	
67-66-3	-----Chloroform	12.	U
107-06-2	-----1,2-Dichloroethane	12.	U
78-93-3	-----2-Butanone	25.	U
71-55-6	-----1,1,1-Trichloroethane	13.	
56-23-5	-----Carbon Tetrachloride	12.	U
108-05-4	-----Vinyl Acetate	25.	U
75-27-4	-----Bromodichloromethane	12.	U
78-87-5	-----1,2-Dichloropropane	12.	U
10061-01-5	-----cis-1,3-Dichloropropene	12.	U
79-01-6	-----Trichloroethene	22.	
124-48-1	-----Dibromochloromethane	12.	U
79-00-5	-----1,1,2-Trichloroethane	12 <del>17</del>	U
71-43-2	-----Benzene	12.	U
10061-02-6	-----Trans-1,3-Dichloropropene	12.	U
75-25-2	-----Bromoform	12.	U
108-10-1	-----4-Methyl-2-Pentanone	25.	U
591-78-6	-----2-Hexanone	25.	U
127-18-4	-----Tetrachloroethene	520.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	12.	U
108-88-3	-----Toluene	12.	U
108-90-7	-----Chlorobenzene	12.	U
100-41-4	-----Ethylbenzene	12.	U
100-42-5	-----Styrene	12.	U
1330-20-7	-----Xylene (total)	12.	U

6/27/91

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

52-22

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No. 00047

Matrix: (soil/water) WATER

Lab Sample ID: 3784.6

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2776

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

63-22

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

00056

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3785.4

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2777

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	100.	U
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	37.	J
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	51.	
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	77.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	1900.	
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S3-22

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.: 00057

Matrix: (soil/water) WATER

Lab Sample ID: 3785.4

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2777

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S4-22

00065

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3786.2

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2832

Level: (low/med) LOW

Date Received: 5/22/91

Moisture: not dec. 100.

Date Analyzed: 6/ 1/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	100.	U
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	50.	U
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	36.	J
56-23-5	-----Carbon Tetrachloride	50.	U
108-05-4	-----Vinyl Acetate	100.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	59.	
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----Trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	100.	U
591-78-6	-----2-Hexanone	100.	U
127-18-4	-----Tetrachloroethene	2000.	
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	50.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	50.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylene (total)	50.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

S4-22

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No. 00066

Matrix: (soil/water) WATER

Lab Sample ID: 3786.2

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2832

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 6/ 1/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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